THE METAL INDUSTRY

WITH WHICH ARE INCORPORATED
THE ALUMINUM WORLD, THE BRASS FOUNDER AND FINISHER AND ELECTRO-PLATERS REVIEW
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THE CONVENTION OF FOUNDRYMEN AND MANUFACTURERS AT CINCINNATI.

The chief event of the year so far as the metal manufacturing industry is concerned, takes place this year at Cincinnati, Ohio, the week of May 17—we refer to the convention of the American Brass Founders' Association and its allied societies, the American Foundrymen's Association, the American Foundry Foremen's Association and the Foundry and Manufacturers' Supply Association. It will be the third convention of the Brass Founders' Association, and in mentioning this organization we wish to emphasize the fact that the constitution of the society provides that any firm actively engaged in metal manufacture (not iron) is eligible for membership. A member's firm can be a smelter, founder, roller, finisher or any kind of a metal worker. The Association welcomes him despite its title of Brass Founder, for the Association occupies the same position in the United States that the Institute of Metals does in Great Britain. Both are organizations working for the educational welfare of the metal industry. Therefore, everyone interested in metals is invited to attend the forthcoming convention at Cincinnati and aid in the good work that the society is doing. At present the American Brass Founders' Association comprises 189 members and the number is steadily growing.

HOTEL SINTON—THE HEADQUARTERS.
VIEW FROM THE REAR OF HEADQUARTERS.

MUSIC HALL—CONVENTION BUILDING.
CONEY ISLAND—THE BARBECUE PLACE.

CINCINNATI—CONVENTION VIEWS.

Regarding what the convention has to offer to

visitors, THE METAL INDUSTRY in its recent issues has forecasted what will take place and herewith reports the events according to the provisional programme. The American Brass Founders' Association being established primarily for educational purposes, the Secretary, W. M. Corse, has obtained a good list of educational papers, the titles and authors of which are as follows:

"The Manufacture of Red Brass Ingot; Its Uses and Advantages," by W. M. Corse.

"A System for Distributing Waste Losses in Raw Material to the Cost of Finished Product," by L. W. Olsen.

"Notes on Brass Melting," by Charles T. Bragg.

"General Principles of Operation of Industrial Pyrometers," by C. H. Wilson.

"Electrolytic Assay of Copper," by Geo. L. Heath.

"The Patent Situation in the United States Respecting Alloys," by G. H. Clamer.

"The Tensile Strength of Zinc-Aluminum Alloys," by W. D. Bancroft.

"Melting of Brass Turnings in the Oil Furnace," by E. H. McVeen.

"The Use of Waste Heat," by F. W. Reidenbach.

In addition to the papers mentioned and the discussion which will follow them, there is a movement on foot to appoint a committee to compile "Standard Methods of Analyses for Brass and Kindred Alloys." The Association has already secured the co-operation of the United States Bureau of Standards and the American Chemical Society, and the subject is in good shape to be taken up definitely at the Cincinnati meetings. The Secretary believes that the Association can make this subject one of its main objects for the next few years and that it will give the Association a leading position in the educational societies of the world.

This year for the first time the sessions of the American Brass Founders' Association and the American Foundrymen's Association will be held jointly so that members of one body who may be interested in the deliberations of the other are not deprived of the information to be obtained. The final sessions, when officers for the ensuing year are elected, will be separate.

The first session will be Tuesday afternoon, May 18, at 2 o'clock, in rooms provided for the purpose at Music Hall.

Tuesday evening there will be a reception tendered by Cincinnati to the visiting members and their ladies.

Wednesday morning at 10 a. m. there will be a second meeting of the Associations.

Wednesday afternoon a third meeting at 2 o'clock.

Thursday morning the fourth meeting at 10 o'clock.

Thursday afternoon and evening there will be a grand river ride to a place on the Ohio river known as Coney Island. THE METAL INDUSTRY last month described the attractive entertainment that has been arranged for at this resort, including a feast of burgoo and Kentucky mint juleps. There will also be a smoker Tuesday evening, May 18, at the Hotel Sinton, the headquarters of the various Associations except the Foundry Foremen, who will go to the Grand Hotel. It will be seen that the entertainment committee has planned an enjoyable programme for the visiting foundrymen and manufacturers.

During the convention the secretaries of the various Associations will arrange for their final sessions that the concluding business may be transacted.

ADMISSION FEE.

Admission to all meetings of the American Brass Founders' Association and the American Foundrymen's Association is free and all visiting metal and iron men are invited to attend. A charge of 25 cents is made for a single admission to the exhibition hall of the Foundry and Manufacturers' Supply Association. Season tickets covering admittance for the entire week can be secured for one dollar. This charge is made to eliminate all curious and disinterested parties, leaving more room and opportunities for those who attend for business purposes.

FOUNDRY AND MANUFACTURERS' SUPPLY ASSOCIATION.

Reports from Secretary Hoyt and all who are in touch with the exhibit of foundry and finishing machinery report that this year's exhibition will surpass all previous ones. A specialty will be a fine showing of the latest types of furnaces for melting metals. It is expected to be the greatest furnace display ever made in the United States. There will also be introduced some new ideas in molding machines and other labor saving devices. It is stated that if a manufacturer wishes to save money he should surely attend the convention and see the latest money saving devices.

The complete list of exhibitors to date, the number of their spaces and what they will exhibit is herewith recorded, also the plan of the exhibition buildings.

ABATE, W. H., Mt. Vernon, N. Y., will show the operation of the Manufacturing Chuck.

ARCADE MANUFACTURING COMPANY, Freeport, Ill. Space Nos. 30 to 35. Latest models of molding machines, also a demonstration of Buck's roll-up device and a Norcross jolting machine which is designed to ram molds weighing up to 20,000 pounds.

BARNETT, OSCAR. FOUNDRY COMPANY, Newark, N. J. Space No. 117. Foundry flasks and supplies. Representative Frank H. Barnett.

BARTLEY, JONATHAN. CRUCIBLE COMPANY, Trenton, N. J. Space 84. Crucibles. Representative Jonathan Bartley.

BERKSHIRE MANUFACTURING COMPANY, Cleveland, Ohio. Spaces Nos. 8 and 9. Berkshire automatic molding machine, new hand squeezer machine, rotary riddles, aluminum snap flasks. Representatives, J. N. Battenfeld, C. F. Battenfeld, R. H. York.

BIRKENSTEIN, S. & SONS, Chicago, Ill. Space No. 21. Metals and brass and bronze ingots. Also crucibles—agents for the Taunton Crucible Company. Representatives, S. Birkenstein and Sons.

BROWN SPECIALTY-MACHINERY COMPANY, Chicago, Ill. Space 101. Core machines.

BUCH'S, A. SONS COMPANY, Elizabethtown, Pa. Spaces 60 to 67. Gravity molding machines in daily operation and the Park's portable jar and squeeze molding machines. Representatives, R. S. Buch, Charles A. West, and P. J. Potter.

CALUMET ENGINEERING WORKS, Harvey, Ill. Space 20. A model of their Calumet Cupola, also ladle, and air hoist valve.

CARBORUNDUM, THE. COMPANY, Niagara Falls, N. Y. Space 23. All forms in which carborundum is manufactured. Representatives, Geo. R. Raynor, W. W. Sanderson, R. B. Fuller and H. A. Eaton.

CLEVELAND WIRE SPRING COMPANY, Cleveland, Ohio. Space 41. A line of steel shop and foundry barrels, steel shop or tote boxes, barrel trucks, etc. Representative, J. W. Campbell.

CRIVEL, GEO. F., COMPANY, Buffalo, N. Y. Space 96. Will be comfortably fitted for receiving friends. Representative, Geo. F. Crivel.

CURTIS & CO. MANUFACTURING COMPANY, St. Louis, Mo. Temporary building. Will exhibit a full line of sand-blasts, air hoists, etc.

DETROIT FOUNDRY SUPPLY COMPANY, Detroit, Mich. Space 95. Will be comfortably fitted for receiving visiting delegates. Representatives, E. J. Woodison and W. B. Howard.

DETROIT TESTING LABORATORY, Detroit, Mich. Space 116. Representatives, J. D. Stoddard and W. P. Putnam.

DIAMOND CLAMP & FLASK COMPANY, Richmond, Ind. Space 114. Will exhibit a full line of core machines, snap flasks, lathes, chucks, etc. Representative, William N. Gartside.

DIXON, JOSEPH. CRUCIBLE COMPANY, Jersey City, N. J. Will exhibit a full line of crucibles and graphites. Representatives,

Dudley Johnson, J. A. Condit, A. L. Haasis, Frank King and Charles B. McIntosh.

Doggett, Stanley, New York City. "Perfection" parting compound, soap-stone facings and manganese di-oxide. Representatives, Stanley Doggett, Andrew J. Johnson and W. S. Rupert.

Falls Rivet & Machine Company, Cuyahoga Falls, Ohio. Spaces 119-122. Will exhibit a complete line of core-making machinery. Representative, George H. Wadsworth.

Goldschmidt Thermit Company, New York. Temporary Building. Will demonstrate Thermit as used in foundries. Representative, A. M. Guenther.

R. F. Goyne, New York. Temporary Building. The M. R. V. crucible melting furnace will be shown in operation. Representative, R. F. Goyne.

Garden City Sand Company, Chicago, Ill. Molding sand.

Gulick, Henderson Company, Pittsburg, Pa.

Hawley Down Draft Furnace Company, Chicago and New York. Temporary Building. Will exhibit two Schwartz furnaces, also one Reyelbec. Representative, Cliffton Bleyer.

Hauck Manufacturing Company, Brooklyn, N. Y. Temporary Building. Exhibition will consist of mold dryers, ladle heaters, etc., all of which will be shown in operation.

McCormick, J. S. & Co., Pittsburg, Pa. Spaces 28 and 29 Special feature of exhibit will be a sand mixer and a magnetic separator, also a full line of foundry supplies.

Miller's Products Company, Chicago, Ill. Space No. 103. Will exhibit core compounds and different grades of foundry flour. Representatives, C. B. Spaulding, S. H. Baird, W. J. Brant, N. T. McGrath and Joseph Harrison.

Monarch Engineering & Manufacturing Company, Baltimore, Md. Temporary Building. A full line of Steele-Harvey furnaces, also blowers, core ovens, portable heaters, etc. Representatives, D. R. Steele, Jas. H. Fowler, M. W. Woodburn and H. D. Harvey.

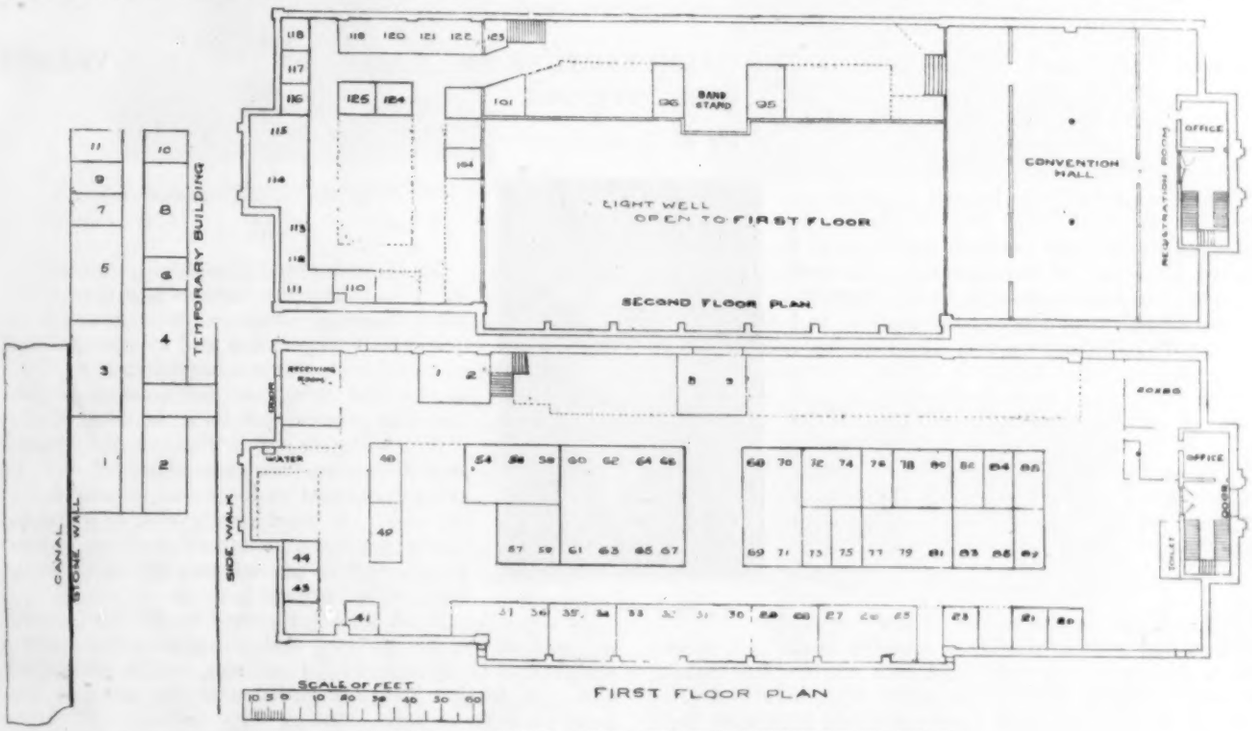
Mount Carbon Company, Pavellton, W. Va.

Mumford, E. H. Company, Philadelphia, Pa. Temporary Building. This exhibit will consist of a full line of molding machines and a number of new types.

Newport Sand Company, Newport, Ky. Will show samples of sand and castings made from their sand.

Obermayer, S. Company, Cincinnati, Ohio. Spaces 77-79. Will exhibit a complete line of foundry equipment and supplies.

Oliver Machinery Company, Grand Rapids, Mich. Spaces Nos. 1 and 2. Will exhibit small tools, such as clamps, hand



PLAN OF MUSIC HALL WHERE EXHIBITION IS HELD.

Herman Pneumatic Machine Company, Zeliople, Iowa. Temporary Building. Will exhibit their various types of molding machines.

Hickman and Williams, Chicago, Ill. Space No. 82. Pig iron samples, etc.

Hill & Griffith Company, Cincinnati, Ohio. Spaces 72-74. Exhibition will consist of a full line of foundry supplies. Representative, William Oberhelman.

Holland Linseed Oil Company, Chicago, Ill. Space No. 105. Will demonstrate their core oil as used in making cores, etc.

Kelly, T. P. & Co., New York. Exhibition will consist of a full line of foundry supplies.

Killing, E. Molding Machine Works, Davenport, Iowa. Spaces 57-59. Will exhibit several molding machines in operation.

Kroeschell Bros. Company, Chicago, Ill. Temporary Building. Crucible furnaces will be shown in full operation.

Macleod, Walter & Co., Cincinnati, Ohio. Space 49. Exhibition will consist of heaters, brazing furnaces, mold dryers, crucible melting furnaces, etc.

Manufacturers Equipment Company, Chicago, Ill. Space No. 100. Will exhibit special tools for finishing brass. Representative, Paul J. Gretel.

screws, vises, etc. Representatives, A. N. Spencer, Walter Mentzer and J. P. Schmidt.

Osborn Manufacturing Company, Cleveland, Ohio. Spaces Nos. 34 and 35. A complete line of brushes, brooms, bellows and general foundry supplies will be shown by this firm, also the Osborn Rockover Drop Draft Molding Machine.

Pangborn, Thos. W., Company, New York. This firm will exhibit a general line of foundry supplies.

Parker Bros. Ltd., Detroit, Mich.

Paxson, J. W. Company, Philadelphia, Pa. Space No. 88. This exhibit will consist of a full line of foundry supplies. Representatives, H. M. Bougher, Howard Evans, L. A. Crandall, I. F. Kremer and Geo. W. Morse.

Philadelphia Chaplet Manufacturing Co., Philadelphia, Pa.

Pickands, Brown & Co., Chicago, Ill. Space No. 83. Will exhibit coke for foundry uses. Representatives, B. T. Bacon, C. L. Miner, T. A. Galligan and G. A. T. Long.

Pridmore, H. E., Chicago, Ill. Spaces 25-27. This exhibit will consist of a full line of molding machines.

Robeson Process Company, Au Sable Forks, N. Y. Spaces 68-71. Glutrin, a liquid core binder will be exhibited by this firm.

ROCKWELL FURNACE COMPANY, New York. Temporary Building. A full line of crucible melting furnaces will be shown at this exhibit, including the lift-out type. Representatives, F. S. Garrett, W. S. Quigley, W. H. Fitch and A. L. Stevens.

SAND MIXING MACHINE COMPANY, New York City.

SELLERS, WM. & Co., Chicago, Ill. Space No. 5. Sand mixing machinery will be shown in operation.

SLY, W. W. MANUFACTURING COMPANY, Cleveland, Ohio. Space No. 89. A miniature cinder mill will be exhibited.

SMITH, J. D. FOUNDRY SUPPLY COMPANY, Cleveland, Ohio. Temporary Building. This exhibit will consist of natural draft furnaces, core ovens, sprue cutters, molding machines, water tumblers, etc. Representatives, J. S. Smith, F. A. Coleman, M. S. Finley and Joseph Harrison.

SQUIER, ED. E. & Co., St. Louis, Mo. Space No. 44. Will exhibit a complete line of foundry sands. Representatives, R. H. Squier and E. E. Squier, Jr.

STANDARD SAND & MACHINE COMPANY, Cleveland, Ohio. Temporary Building. This firm will exhibit a complete line of sand mixing machinery.

STERLING WHEELBARROW COMPANY, Milwaukee, Wis. Space No. 124. A full line of foundry flasks will be exhibited by this firm. Representative, I. R. Smith.

TABOR MANUFACTURING COMPANY, Philadelphia, Pa. Spaces Nos. 36-38. Exhibit will consist of a full line of molding machines, both hand and power. Representatives, Wilfred Lewis, John T. Ramsden, C. W. Coleman and C. H. Ellis.

THE METAL INDUSTRY, New York. Representatives, Palmer H. Langdon, L. J. Krom, F. B. Fritz.

WHITING FOUNDRY EQUIPMENT COMPANY, Harvey, Ill. Spaces Nos. 77-81. This firm will exhibit a full line of foundry supplies. Representatives, R. H. Bourne, T. S. Hammond, P. A. Dratz and C. Hughes.

From the above outline of arrangements it is evident that the executive boards, the committees in charge, and the secretaries of the associations have carefully looked ater the technical, commercial and pleasurable ends of the Cincinnati convention, and that it will be an event well worth the time, journey, and money spent in attending.

BRASS FOUNDRY PRACTICE IN THE MANUFACTURE OF STEAM AND WATER VALVES AND FITTINGS.

By W. J. REARDON.*

There is probably no branch of the brass foundry business that has developed as much in the last ten years as the valve and fitting line. All efforts have been directed towards one immediate end: to facilitate the production and to improve the quality, and the results obtained in this direction have been astonishing.

The valve shops were the first to take advantage of the molding machine and develop it to the state of perfection that it stands in to-day. They were also the first to introduce into their foundries the modern methods of brass melting as well as core making.

W. J. REARDON.

CORE MAKING.

Right here is where one of the largest savings has been in the brass foundry in the last twenty years, particularly in valve and cock work. The making of cores is one of the most essential departments of valve making to-day. Yet how few look to the core shop for a saving! Most shops employ girls on this class of work and they are under the impression that they are producing at a minimum cost, but since the introduction of oil sand for cores, it has been made possible to increase the production 500 per cent.

I have in mind now where five hundred ½-inch globe valve cores were considered a good day's work, and that by an experienced hand of from one to two years' standing. To-day three to four thousand cores can be made in one nine-hour day by a comparatively green hand with six months' experience. This has been made possible by the use of the oil sand and the multiple core boxes, that is, a core box in which a number of cores are made at once. In this particular case twelve cores were made at once or in one box. I have seen as many as twenty thousand ½-inch tees made by one girl on a test run in a ten-hour day. I will not attempt to describe this process in detail but will simply say that by the use of oil sand no wire or nails are needed, and as many cores are put in one box as can be handled and not make the core box too heavy.

GENERAL CONSIDERATIONS.

THE SAND.

It is undoubtedly a highly interesting study to follow the various branches of the brass foundry. It is well known that it requires long experience and exceptional skill to produce results in a brass foundry. Sand is the first thing we will consider. The essential requirement in a molding sand is that it will give a smooth surface. It must also allow the free passage of air and the gases generated as the metal is poured into the mold. It must also be able to resist the pressure of the metal as well as cutting action, and be porous enough to allow the mold to be rammed firm.

With a soft rammed mold the castings are seldom like the pattern, and this also causes quite a variation in the weight of the castings, and in valve work this is a decided loss. It also causes the metal to tear away particles of sand, causing dirty castings. It should be refractory enough to stand the temperature of the metal.

While there are a great many grades of sand that will no doubt answer for this work, the sand I have found

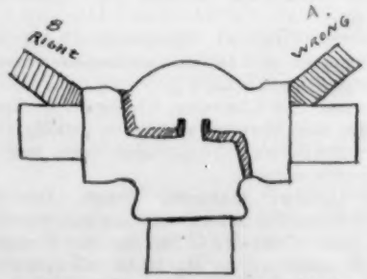


FIG. 1. GATING A GLOBE VALVE.

best is No. 2 Albany. A casting weighing one ounce or one ton can be made with this sand and give satisfaction.

*Supt. Brass Foundry, Westinghouse Electric and Manufacturing Company.

GATING THE MOLDS.

The next thing we will consider is the gating. On such work as valves very often there is a big loss, due to leaking under pressure. There is no operation more essential than the gating of castings. The casting should be studied and the metal considered that the casting is to be made of before gating. That poor gating is responsible for more defects in brass valves or other castings that are tested under air, steam or water pressure, than

FIG. 2. LEAK DUE TO BAD GATING.

any other one thing in the foundry, has been proven many times.

Take a ½-inch Jenkins globe valve. Fig. 1 *a* shows the improper method of gating. Still a great many foundries gate just like this, and it is all done in putting the core in the mold.

If the seat of the core is put in opposite the gate, the result is that the seat being the heavier part will be the last to cool and draws from the lighter part which is the first to cool and which is generally point *c*, Fig. 2, thus causing crystallization or porosity. When a casting is tested under pressure any defects due to molding or gating are at once shown up.

So far as commercial castings are concerned the ideal casting will therefore be one which is gated or risered in such a manner that the casting will set before the gate.

Fig. 1 at *b* shows the proper way to put a valve core in the mold with seat to the gate, the gate large enough to feed the valve, so it will pass from the liquid to solid state at a uniform rate in all parts, and in which solid

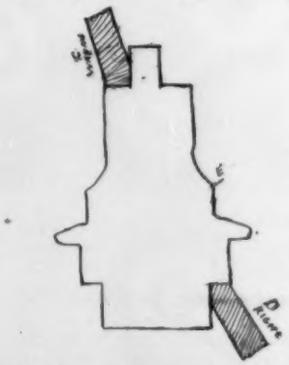


FIG. 3. RIGHT AND WRONG WAY TO GATE A BONNET.

contraction is fully shown without developing any stresses as the result of contraction. This rule is not only for valves and castings that are tested under air, water or steam pressure, but should be borne in mind by all brass molders.

For a standard method of gating brass and bronze castings I recommend the following: Make the gate and runner large enough so that casting will cool before the gate does. Where there are heavy parts such as flanges, etc., on the castings, risers should be put on such heavy parts that the gate does not feed so that these parts will have something to pull from when solidifying.

Fig. 3 shows the right and wrong way for the gating of bonnets, or hubs, as they are called in most places, *c* being the wrong way and *d* the right way; for the same

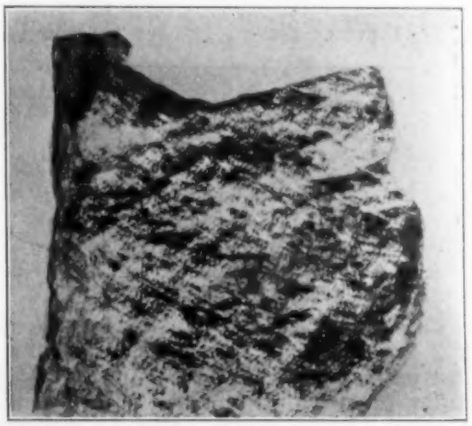


FIG. 4. 98 PER CENT. SILICON.

reason as in the case of the valve. That is, the gate end being the lighter section, cools first and pulls from the liquid part, causing a coarse crystalline and broken structure. When put under pressure this structure is found, in nine cases out of ten, to cause considerable loss in leakage, the general point of defect being at *e*, Fig. 3.

FIG. 5. 10 PER CENT. SILICON COPPER.

FIG. 6. 10 PER CENT. PHOSPHORUS TIN.

If hubs are gated at *d*, Fig. 3, the loss in leakage should not be anything to speak of.

In spite of what is said regarding the use of scrap metal, I have found in my experience that scrap or remelted metal is better than new metal for hydraulic work. By this process a closer grain and denser structure is obtained. One of the most important features of hydraulic metal is the compactness of its structure, and mastery of this point contributes largely to the success of the casting. In gating castings for water, air or steam pressure, all defects cannot be mastered as a whole, but one by one they must be taken up and conquered. When

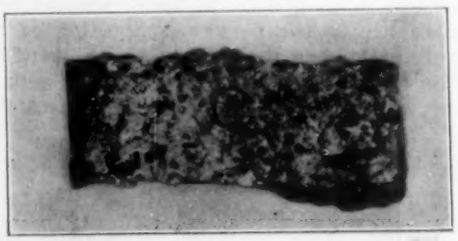


FIG. 7. 30 PER CENT. PHOSPHORUS COPPER.

one has studied the eccentricities of each casting he will find that to gate intelligently and get the best results requires long and hard study.

MELTING AND POURING TEMPERATURES.

The next step to consider in the valve and fitting foundry is melting and pouring temperature. Here is where the skill of the foundryman is best shown. Whether the melting is done in crucibles or in oil-fired furnaces, just as good or bad results can be obtained from the one as from the other; it all depends upon the management. For myself, I prefer the oil furnace for the following

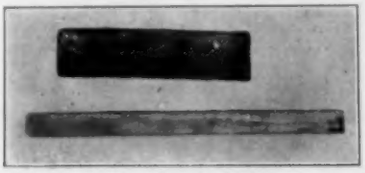


FIG. 8. 10 PER CENT. MANGANESE COPPER.
FIG. 9. MAGNESIUM.

reasons: First, for quicker results, and second, it is far cheaper.

In the type of oil furnace I am using at the present time 500 lbs. of metal can be taken out every 15 or 20 minutes with as small a loss as is possible with crucibles, and the metal is of equal quality. The above statement may be questioned, but it can be done and is done, every day at the foundry with which I am connected. Many melters may say that they have tried oil furnaces and have not had as good success as with crucibles. I claim

FIG. 10. SPRUE OF OVER-HEATED METAL.

it is not the furnace at fault but the manner in which it is handled.

It requires far more skill to melt successfully in an oil furnace than in a coke furnace. The secret of the oil furnace lies in the perfect combustion of the fuel. This is attained when the oil and air are in the correct proportion to produce a reducing flame. It is the oxidizing flame which causes trouble, as it oxidizes the metal

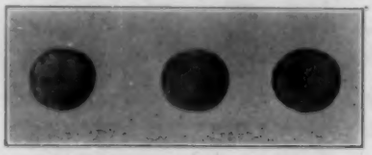


FIG. 11. SHOWING SEGREGATION.

and forms an undue amount of slag besides contaminating the resulting metal.

I happened to visit a foundry one day where they were using an oil furnace. They had quite a lot of slag at every heat. I picked up a small piece of this slag and had it analyzed. It showed 69.42 per cent. of copper. This fact at once proved to me that where there is any great amount of slag, beside what is caused by sand introduced by the scrap and gates, the metal must be oxidized and undergoes serious loss.

Here are a few rules that should govern the melting of metals: First, if using crucibles, see that the furnace is so constructed as to have a good draft—natural draft is to be preferred—in order to be able to melt quickly. If new metal is used, place the crucible in furnace, setting it on an old crucible bottom and placing coke around the crucible. Put as many ingots of copper in the crucible as will conveniently go in without wedging. With these ingots put in a half shovel of charcoal. Close the furnace and place remaining ingots around the furnace top. Watch the fire, and as the ingots melt down add the re-

FIG. 12. SHOWING RAISED METAL.

mainder and bring the metal to a good heat as soon as possible.

The copper should be hot enough to take the zinc, lead and tin, and in from five to ten minutes be ready to pour. When ready, pull and pour. If the molds are not ready when the metal is, it is far better to pour it into ingots and remelt than to allow the mixture to soak in the fire. Letting the metal remain in the fire causes it to become dull and pasty owing to the absorption of oxide. The oxide being mechanically combined renders the metal sluggish and totally unfit for castings designed to stand pressure.

If scrap is used, such as turnings and chips, place the

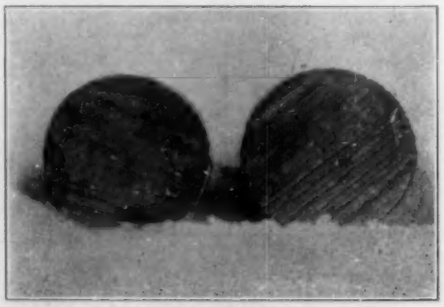


FIG. 13. MADE FROM OVERHEATED METAL.

crucible as before, charge in about 50 lbs. of gates with a half shovel of charcoal. When this is melted add the turnings, using a sheet iron funnel that fits inside the furnace. Then add more charcoal. Continue this process until the pot is full, bring quickly to pouring temperature, throw open the furnace cover, loosen the coke around the pot and allow the crucible to become slightly chilled on the outside to avoid crushing with the tongs.

If oil melting furnaces are used, the first thing is to

get a perfect combustion of oil and air. This is obtained by having the required amount of oil and air pressure to create a reducing flame. When this is mastered the melting is perfect and all the oil is burned. One of the ways of telling this is that there is no odor from the oil. Another is absence of slag. If the furnace is making slag it is due to imperfect combustion, which is the most essential factor of melting in oil furnaces.

If it is impossible to obtain this combustion condition and an oil melting furnace is still used, a most uncertain and expensive condition will prevail, and it would be well not to attempt to melt any metal for work to be tested under pressure in this type of furnace. It would be well to call in an expert on this and ascertain why a reducing flame cannot be produced from the furnace.

Assuming that the flame is perfect, the furnace is now charged. If new metal is used, charge all the copper at once, and if tin, lead and zinc are to be added it is well to have them melted down in the proportions wanted; say the mixture is 85 per cent. copper, 5 per cent. zinc, 5 per cent. tin and 5 per cent. lead. This is a good mixture for steam work. Have the lead, tin and zinc melted together as a hardener, and to every 85 lbs. of copper add 15 lbs. of hardener. When the copper is melted shut off the fuel and add charcoal. If the furnace is handled properly the hardener can be added in from 15 to 20 minutes, the mixture poled with a hickory pole for a minute or so; the blower is turned on for about three minutes and the metal should be as good as any melted in a crucible.

When using turnings, charge a portion of the gates, then turnings, and follow up with more gates. If the furnace is working right, twenty to twenty-five minutes will be sufficient to blow the charge. The metal should be hot enough in that time for any work. A flux of fluor spar—½ pound to the hundred pounds of metal—should be used. Pouring temperatures are regulated by nature of the alloy melted.

OXIDIZATION AND ITS PREVENTION.

Gun metal alloy, known as 88 per cent. copper, 10 per cent. tin and 2 per cent. zinc, is about the strongest of the copper-tin alloys, and one of the most difficult to cast. This alloy will liquate considerably during slow solidification. Guns are therefore cast mouth upwards, with long, sinking heads. Another great difficulty with this mixture is its tendency to absorb oxide and hold it mechanically, thus causing sluggishness, and if, on the other hand, too high a heat is used, crystallization and segregation will ensue. Lack of fluidity also causes the prevention of the formation of sharp, clean castings.

Sluggishness can be entirely prevented with a minimum amount of heat by simply removing the dissolved gases and oxidation products from the metal. This can be done by the addition to the alloy of some powerful reducing agent which decomposes the oxide of tin and at the same time the oxide of zinc which is insoluble in the alloy and light enough to rise readily to the surface. There are a number of these deoxidizers on the market—phosphorous, silicon, manganese and magnesium. This last is one of the latest deoxidizers to be used and is said to be a very powerful reducer of oxides.

As all these deoxidizers are very difficult to handle in their natural form they are used generally in alloy form. There are on the market a number of these reducing agents; some of the more important combinations are: Phosphor tin and copper each with from 5 to 10 per cent. of phosphorus; silicon copper with 10 to 30 per cent. of silicon; magnesium copper with 10 per cent. of magnesium, and manganese copper with up to 30 per cent. of manganese.

For heavy work made of the regular gun metal mixture I would recommend the use of manganese copper, a very small amount of which will not only reduce the oxide of zinc which is insoluble but will also cause the metal to set more quickly and reduce segregation. Phosphorus should not be used in any alloy containing a large amount of zinc. For such alloys I have had the best results from common salt. Phosphorus is probably the best known deoxidizer for red metal containing no zinc, or at least the minimum amount.

The action of silicon on copper is similar to that of phosphorous. It acts as a deoxidizer, and the silicon formed being an acid, is a valuable flux for any metallic oxide remaining unreduced. Therefore any of these deoxidizers properly handled will materially assist in the perfection of any alloy that may become defective in melting either in crucibles or in oil furnaces.

Fig. 4 shows 98 per cent. pure silicon; Fig. 5, 10 per cent. silicon copper; Fig. 6, 10 per cent. phosphorus tin; Fig. 7, 30 per cent. phosphorus copper; Fig. 8, 10 per cent. manganese copper; Fig. 9, magnesium.

Any or all of these fluxes are as medicine and should be used with the skill of a doctor, or the cure may be worse than the disease. For the handling of these fluxes it is always good economy to employ a properly qualified person acquainted with all the details of the process. Fig. 10 shows a sprue that was taken from a heat of metal poured from metal containing oxide, and was overheated to expel the oxide and shows how the metal was forced out of the sprue. Fig. 11 shows the effect of segregation on the casting. This metal was made in a crucible furnace. Fig. 12 shows the top of a sprue where the metal raised after pouring. This metal was made in an oil melting furnace, showing that just as bad condition may be had in oil furnaces as crucibles.

When castings are poured from any metal where the sprue shows a tendency to push up, it would be far better economy to scrap the whole heat than to deliver them to the machine shop.

Therefore foundry foremen will save considerable expense if they will carefully watch the pouring of their castings, and when the first mold is poured the sprue should be inspected. If it shrinks the metal is right, but if it rises there is something wrong. The metal may have been overheated or may contain some dissolved oxide and a deoxidizer is needed. Fig. 13 shows a casting sawed in two, having been poured with overheated metal.

COMPOSITION.

One of the important features of machine foundry practice is prevention of waste and uniformity of composition. One of the largest valve manufacturers buys all kinds of scrap brass of any composition and converts to an alloy of approximately 76 per cent. copper, 10 per cent. zinc, 10 per cent. lead and 4 per cent. tin. It may vary 1 per cent. from this up or down, but no more. By this process of alloying this scrap they get a valve of good color, while I know of concerns using the same mixture whose valves show black spots due to lead. This mixture I consider one of the best alloys for density of structure of any of the cheaper mixtures.

However, the composition of the alloy in most cases is not the cause of leakage under pressure. The most frequent sources of trouble which give the foundry foreman gray hairs and sleepness nights may be summed up as follows: Oxidation or dross contamination, segregation, coarse crystallization and excessive absorption of gases by the metal, for the metallurgical end, and improper gating together with poor moulding practice for the mechanical.

MOLDING MACHINE PITFALLS.

By Wm. H. Parry.*

WM. H. PARRY.

"Why, old man, you're way behind the times! and if you don't get a move on your competitors 'll put you out of business," is a remark that is often heard nowadays in both the iron and brass foundry trades, and the "sayee" is very apt to be one of two persons; the molding machine salesman, or some misguided party who has gazed upon a molding machine in operation and who imagines that the mere purchase of a molding machine will produce dividends so plethoric as to become a burden to the deluded foundry owner.

"Make haste slowly" is an old axiom and a very true one as regards the installation of molding machines, and if one were to believe the tales told by the salesmen thereof (and many a poor devil of a superintendent has), it would appear that any piece made in a foundry could be molded on this, that, or the other machine. Many "fakes" are practiced in the trade upon unsuspecting managers, superintendents and foremen of foundries, who have never had time to investigate the claims made for the various types of machines, or have been compelled to produce work on machines that were placed in the foundry "over their heads."

AUTOMATIC MACHINES.

Beware of the automatic machine that runs so fine at conventions but nowhere else; they'll tell you it will make anything of a certain length, width and depth, when they very well know its limitations in this respect are restricted to the making of reversible molds that will handle cored work only when the same is exactly similar on each side of the parting, or centre line, such as faucets, pipe fittings and certain types of radiators; while it will not handle cored work of many classes, because it is impossible to set your cores in the cope half of the peculiar reversible mold made on this type of machine.

There are three other types of automatic machines, one of which makes the drag and cope side by side, turns them over and rolls them out on a carriage ready to be closed down. This, on first sight, looks good, but the multiplicity of parts that are necessarily needed to do these stunts condemns it at once. For while automatic screw and rod machines are a howling success in modern manufacturing processes, it does not follow that the same applies to automatics for foundry use, because of the ever-present flying particles of sand that mix with the lubricants used, thus forming an excellent grinding material to wear all of the bearings out in a short time, in spite of all the dust-proof guards with which they are encumbered, to say nothing of the ill-proportioned parts that will break when the machine is most needed. The second of these types resembles the Colossus of Rhodes in design, and claims an output of anywhere from 100 to 200 molds per hour. It is really a succession of machines placed on a rotating table where a sequence of operations follow each other so rapidly that one almost expects to hear a cuckoo clock announce to the "pouring gang" that their day's work is only fairly started when but four hundred molds are poured off and that while they are resting themselves they can pour the remainder. Ye gods! Think of the floor space necessary to pour 900 to 1,800 snap molds without stacking, and this from one machine, and the corps of trained athletes necessary to run back and forth with these molds and the ladles of iron to fill them.

The third of this trio is of foreign make that turns a handspring (from pure joy) every time it completes a mold, though there is no steam coming out of the operator's shoes when engaged in running the machine, as it is rather a leisurely affair, due no doubt to the one who designed it. Their method of making the white metal patterns is hailed as a new departure, though in reality it is as old as sin and not half as enjoyable. Then we have the machine that drops the sand from the vicinity of the roof, or above it, and does the vertical ramming nicely, but not so the horizontal (or tucking), though the promoters forget to mention it and also the fact that the castings from the molds made on this high flyer always show lateral strain due to improper ramming.

Next we have the jolt or jar ramming machine, that makes a trip, drop or steam hammer turn green with envy because of its noise-producing abilities. This might be a poor argument to advance in opposition to the machine, but there are a few others that may make prospective buyers hesitate. To make this machine a success it is always necessary to build a resilient foundation of great depth, similar to those built under large steam hammers. This, of itself, is very costly, though, if that were all, it still would pay to install; but it would necessitate the placing of this machine in an isolated building because of the shocks from it cracking all other molds within a radius of nearly ten feet, if placed on the main floor of the foundry, and it consumes air about as greedily as a hungry dog does a beefsteak. While this may not mean the purchase of a separate air compressor, it will certainly help very materially in disposing of any surplus compressed air that happens to be loafing around the foundry. If the building be of brick, stone or concrete, these machines are guaranteed to give it as fine a "shakedown" as is possible, and in a very short time.

MULTIPLE MOLDS.

Stacking up multiple molds catches the eye at once, and is considered the right thing to do, at first sight, but there is a limit even to this good thing; yet one would argue if you can pour four molds high why not four times four? And that's the rub, because if any piece is so formed that its highest level is above the level of the gate, gas from the lower molds will be trapped in the upper, and bad castings will result with sufficient frequency to make one wish that he hadn't departed from the old snap bench single mold idea. These machines are also good air consumers, and one of them uses a fair amount of electric current as well. There is also need for a most excellent and costly foundation, and a sound muffler ought to be installed to prevent the neighbors from complaining to the local board of health.

ADVANTAGES OF MOLDING MACHINES.

We arrive now at the various makes of air squeezers with vibrator attachments, that are very similar, one to the other, and for certain classes of work they fill the bill very nicely indeed; some are costly, some are not; and it does not follow that the costliest are the best, though it does follow that the cost of maintenance is

*Supt. Brooklyn plant of National Meter Co.

high, especially so on the vibrators before mentioned, as the troubles that beset these "air guns" include such diseases as "the wheeze," "asthma," "phthisis" and "blind staggers." After enumerating the weaknesses that these various machines are heir to, it would only be fair to say that there are some good ones still on the market, and, strange to relate, they are the very cheapest. I refer to the simple squeezer that can be bought for fifty-five dollars, with a pneumatic rapper (not vibrator, mind you) attachment that gives excellent satisfaction and turns out, in the hands of a competent operator, a glorious day's work that can be poured off with comparative ease by the same man, if you run your foundry that way. Then we have the plain stripping plate machine, equally as cheap, and on repetition work as capable of earning dividends as one costing many hundreds of dollars. It is also safe to advocate the buying of a plain, hand-operated rockover machine that will lighten the day's work of the operator, and is so arranged that "printing back" becomes a simple operation even when in the hands of a green operator.

These three machines, then, are a boon to the shops that are bitten by the molding machine bug, by reason of their high efficiency and the comparatively low price of the patterns necessary to produce high-grade work, for, after all is said and done on the molding machine question, it becomes more and more apparent to any student of the game that the making of machine molds is almost entirely a matter of expert pattern-making, both metal and wood, and the facts are that there is a very decided dearth of patternmakers who thoroughly understand molding machine practice, because they have not kept pace with the strides made along these lines. To prove this contention it is only necessary to cite a recent instance where an "ad." was inserted in a trade paper expressly stipulating that a metal patternmaker who understood up-to-date molding machine practice and mounting patterns for same was wanted at good wages, and after having interviews, both oral and written, with the most promising, it was made evident that not a single one had anything but the crudest knowledge on the subject, notwithstanding that sixty answers were received from all parts of the country. So if you will go into the equipping of your foundry with molding machines, start with these machines as a base, and build up to the other kind by easy stages; in the meantime, educate yourself and your patternmakers up to the point where you can feel that it will pay to install these costly machines, for he who expects any help of this nature from the makers of molding machines is sadly mistaken, though they will tell you that one of their own men's services is at your disposal, and in the next breath will advise that you have all your metal patternmaking made at their plant, which you will find is a good thing—for them.

CONCLUSION.

In summing up this molding machine question, a few don'ts will give you a line on how best to circumvent the wiles of the molding machine salesman, and as every foundryman has to work out his own salvation, the advice may prove a valuable guide:

Don't install, except on a long term approval.
Don't buy a jarring machine for shallow work.
Don't buy an automatic for very deep work.
Don't expect one Rollover to make drag and cope.
Don't install a $25 squeezer for reprint work.
Don't use a stripper on work that's all draft.
Don't use a jolt ram on delicate patterns.
Don't buy a multiple for deep work.
Don't stack your molds more than five high.

MANGANESE BRONZE MIXTURES.

No metal in general use probably has a more extensive and varied field for application than manganese bronze; its uses are manifold and no matter what the difficulties in the way of producing perfect initial castings or ingots may be, the results are well worth the effort and expense. Much has been written about its superior qualities and wonderful properties of withstanding atmospheric action, corrosion by salt water and dissolution by acids.

Whole pages have been written regarding the care and labor necessary for the successful production of manganese bronze, but it has been remarked that little information has been given regarding constituent formulas. The reason for this is obvious, the mixtures of these bronzes being so many that it is impossible to set down any definite line, unless the particular use for which the metal is to be made is specified.

Manganese bronze is divided into two classes called the red and the yellow. The red variety is used for bearings, gear and worm wheels and parts exposed to wear, and runs from the true bronze mixture of 80 parts of copper, 10 parts of tin and 10 parts of 20 per cent. manganese copper, to the low brass class of mixture of 74 parts of copper, 8 parts of tin, 5 parts of zinc, 3 parts of lead, and 10 parts of the manganese copper, and is used for machine parts.

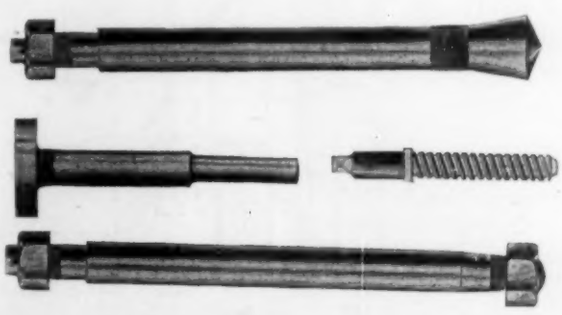
The yellow variety approaches more nearly Muntz metal and is used for propeller blades, parts of guns and carriages, automobile castings, valve stems and shafting of motor boats. The mixture for this class of manganese bronze, which is not in this case to be classed as a bronze, runs from 50 parts of copper up to 60 and over. A popular mixture used for propeller blade consists of 50 parts copper, 6 parts 20 per cent. manganese copper and 44 parts of zinc.

Some recent analyses of manganese bronze show:

	For castings.	For sheet metal.
Copper	57.30	60.17
Zinc	40.44	37.47
Tin	1.01	.99
Iron	.79	1.24
Lead	....	trace
Aluminum	.46	....
Manganese	trace	.02

The content of manganese in all these mixtures should never show more than from a few hundredths of one per cent. to a mere trace, the best practice being to introduce no more of this element than is necessary to reduce the existing oxides, but as this is a very delicate operation, traces of manganese are generally found upon analysis.

The cut below shows some articles made from Parsons' manganese bronze No. 6, of which torsion and tensile test results are published on page 175.



ARTICLES MADE OF MANGANESE BRONZE.

THE TURRET LATHE AND ITS EQUIPMENT.

Cutting Tools.

By Easy Way.

(Continued from April issue.)

A cutter for boring, facing and camphoring at one operation is shown at Fig. No. 8. After the internal scale has been removed by the roughing cutter, a reamer should be used for rounding and sizing the hole; of these there are several styles and the shapes can be innumerable. The plain solid four-lip reamer is the commonest and the one used most extensively. This can be used in a rigid or floating holder, according to what is required. When held in a floating holder the work produced will be as a rule nearer the actual size of the reamer than if it were held rigid, as it follows the line of least resistance, while the rigid reamer has to have perfect alignment to perform its work correctly.

An expansion reamer is shown in Fig. No. 9, the blades are formed on the ends to fit the convex nut which holds them in place, and also forces them forward to make allowance for grinding the ends. By loosening screw A an adjustment can be made through taper screw B. A floating holder is shown in Fig. 10, the principle being to allow the reamer to align itself on the cutting end. This is attained by removing the stock on the bushing to within 3/32 in. from the end, which should be turned ball shape. The back should be concaved; this allows it to swivel in the holder and still holds it central. Set screw B prevents bushing from turning; by this construction different sizes of bushings can be kept to fit the shanks of standard reamers.

A slip stock for taps is shown at Fig. No. 11. This stock is not cumbersome and works equally well with either very fine or very coarse pitch taps. The backing off arrangement is shown at section AB. The driver E is held to its position on the cam by spring F. This idea works smoothly on right or left hand threads, the strain of tapping is taken by hardened pieces of steel G and H, these slip into slots shown at section C and D. These pieces are reversible, thus giving a wearing capacity of eight slots.

(To be continued.)

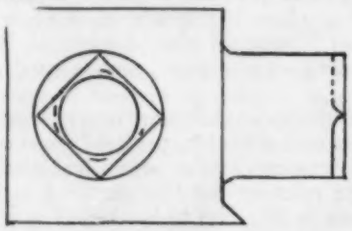


FIG. 8

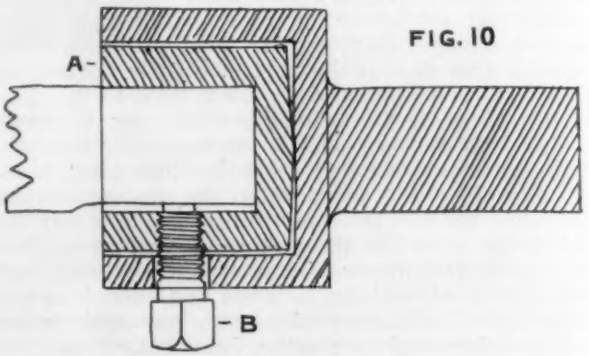


FIG. 10

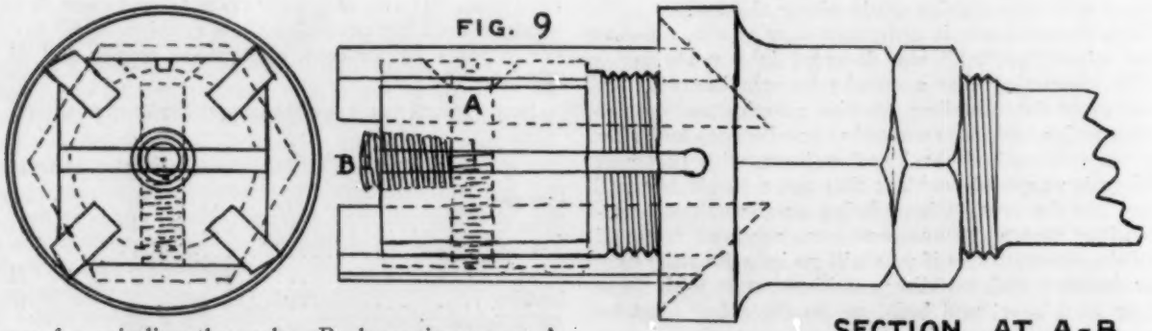
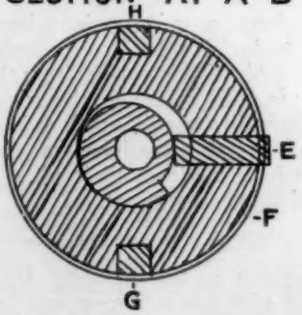


FIG. 9



SECTION AT A-B

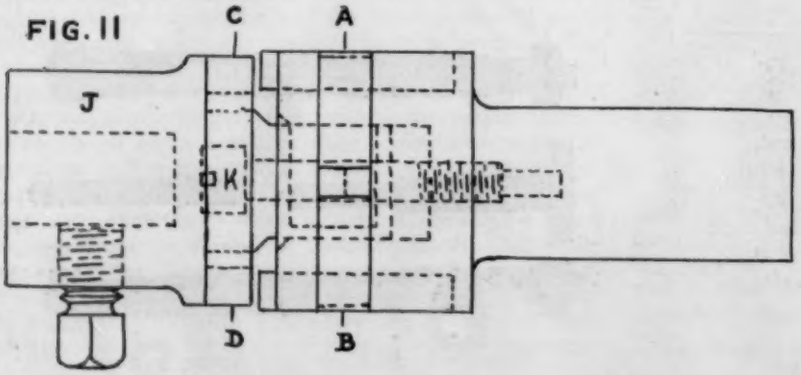
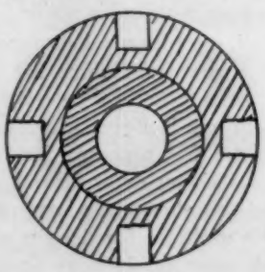


FIG. 11



SECTION AT C-D

NEW DEVELOPMENTS IN MANGANESE BRONZE.

The William Cramp & Sons Ship and Engine Building Company, of Philadelphia, Pa., have had remarkable success in the manufacture of manganese bronze of all classes. This company purchased the rights for this country for the manufacture and sale of Parson's manganese bronze, based on the formula of the Manganese Bronze and Brass Company, Ltd., of London, England. From this formula the Cramp Company have produced their new metal called Parson's Manganese Bronze No. 6, and for this metal they have also purchased the exclusive rights for the United States. The following table gives some interesting results of tests made by Professor Carpenter of Cornell University, on both the rolled Parson's Manganese Bronze and the new metal. Also results of tensile tests of forgings made with the new and the old metal.

TENSILE TESTS OF PARSONS' MANGANESE BRONZE FORGINGS.

Quality.	Ultimate Strength.	Elastic Limit.	Elongation.	Reduction of Area.
New metal, mild....	81,500	39,300	40.0%	47.5%
New metal, high....	90,500	44,750	26.0%	33.0%
Old metal	70,850	39,000	40.5%	41.5%

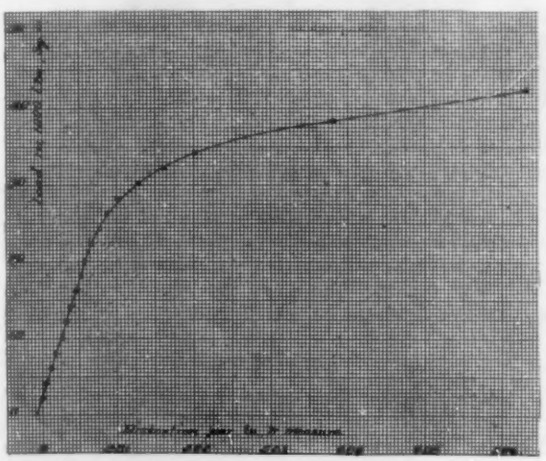
TORSION TESTS OF PARSONS' MANGANESE BRONZE.*

Quality.		Moment of Torsion.	Angle of Torsion.	Shearing Stress, lbs. Per sq. in.	Modulus of Rigidity, Avg. value.
New metal, mild	Elastic limit	4,400	.0074	22,200	6,000,000
Hot rolled	Maximum	12,200	540°	61,800	
New metal, mild	Elastic limit	5,200	.0097	26,500	5,460,000
Cold rolled	Maximum	13,200	560°	67,300	
New Metal, high	Elastic limit	4,000	.0063	20,500	6,500,000
Hot rolled	Maximum	12,500	150°	63,750	
New metal, high	Elastic limit	5,150	.0083	26,000	6,270,000
Cold rolled	Maximum	13,200	315°	66,700	
Old metal	Elastic limit	2,980	.0048	15,000	6,220,000
Hot rolled	Maximum	10,900	180°	54,850	
Old metal	Elastic limit	3,060	.0063	15,500	4,905,000
Cold rolled	Maximum	12,200	411°	61,850	

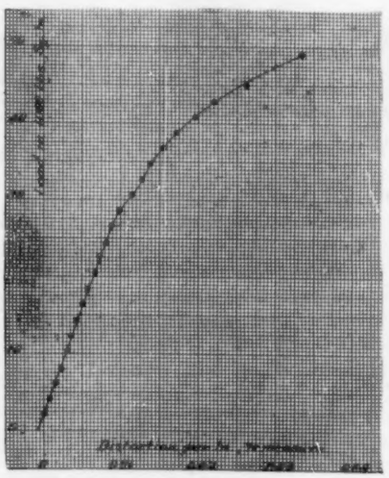
*Note the great improvement in elastic limit of the new metal over the old metal.

From report of Prof. Carpenter.

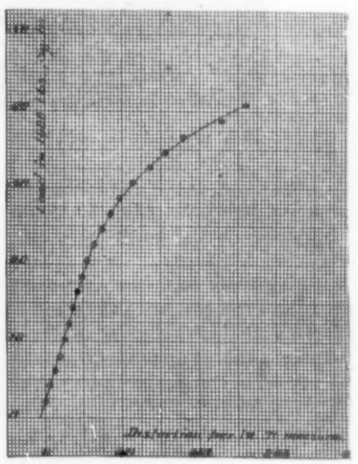
(See article on page 173, which gives some chemical mixtures for the various classes of manganese bronze, and shows the wide range in composition of this material. The cut shows articles made of the new bronze.—ED.)



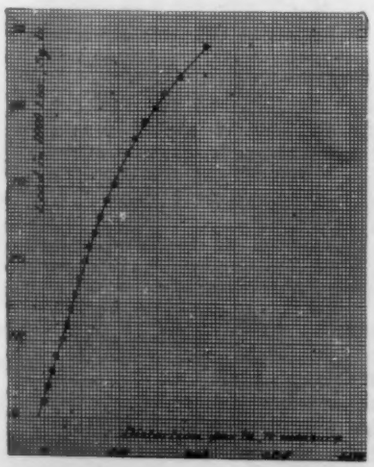
TORSION TEST OF HOT ROLLED PARSON'S MANGANESE BRONZE NO. 6. QUALITY MILD.



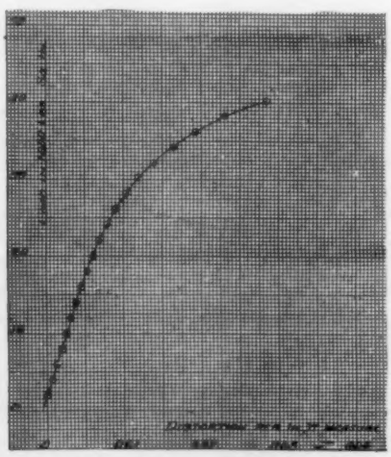
TORSION TEST OF COLD ROLLED PARSONS' MANGANESE BRONZE NO. 6. QUALITY MILD.



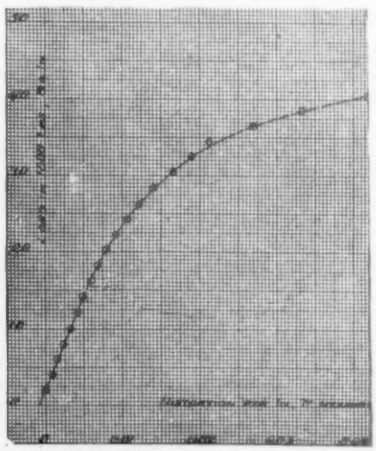
TORSION TEST OF HOT ROLLED PARSONS' MANGANESE BRONZE NO. 6. QUALITY HIGH.



TORSION TEST OF COLD ROLLED PARSONS' MANGANESE BRONZE NO. 6. QUALITY HIGH.



TORSION TEST OF HOT ROLLED PARSONS' MANGANESE BRONZE NO. 1-A.



TORSION TEST OF COLD ROLLED PARSONS' MANGANESE BRONZE NO. 1-A.

A GOOD BLACK FINISH.

By S. Herrick.

During the past few years I have often been called upon to produce a good black finish on polished articles in an economical and efficient manner, one that would not fade or tarnish after a few months exposure. The following solution I have found to be far ahead of any solutions that I have come in contact with up to the writing of this article.

For a 5-gallon solution use 5 pounds of white arsenic, 4 ounces of carbonate of copper, 1¾ pounds of cyanide of potassium. The easiest way to mix the solution is to dissolve the cyanide in hot water and pour over the arsenic and copper, thereby taking up the metal in an easy manner. A low current is needed for this solution, of about 1 volt. Use a cast brass or copper anode. A very good plate will be obtained in from 3 to 5 minutes.

FIG. 1. BLACK COPPER FINISH ON BRASS PLATE.

On polished surfaces the articles do not need to be buffed after plating. If a heavy plate is desired articles may be plated for 20 minutes or one-half hour and buffed in the usual manner.

This solution may be used for brass oxidizing and will give better results than most of the solutions in use at the present time; also by increasing the current a little, a good steel black or steel grey may be obtained. As it has been my experience in the past to find that black nickel solutions have a tendency to change and that no two are made alike, I have always recommended this solution, as it is more uniform both in action and deposit. And it is far more simple both to make and take care of after it is installed, there being no acid chemicals in the solution.

Should this solution need replenishing, always add arsenic, copper and cyanide in the exact proportions, and there never will be any trouble with the solution, as cyanide has a tendency to evaporate; add a little about once a month. This solution will not need metal above twice a year and sometimes only once. The solution should stand about 15 degrees Be and may be run with safety at 6 degrees Be.

If a good brass oxidized finish is desired, plate the article until dead black, take out and rinse, relieve with pulverized pumice stone or buff as is needed for a dull or bright finish and lacquer.

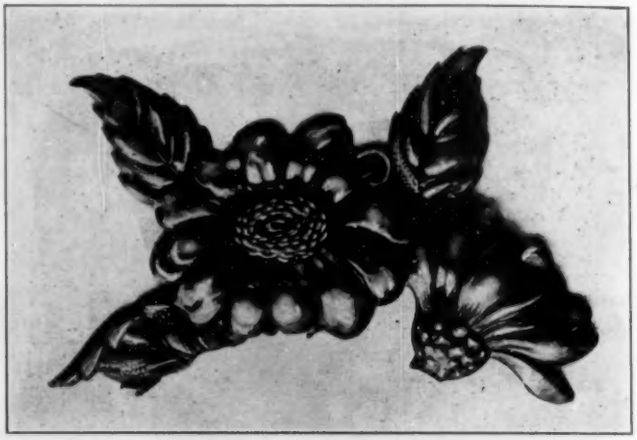


FIG. 2. THE SAME BLACK ON BRASS OXIDIZED WORK.

In producing a steel finish with this solution it will be found that the deposit is even and of a good color, and from work that I have submitted samples of, see Figs. 1 and 2, I have not had one piece that would either change color or fade; where in black nickel or black dips I have not found one that will stand even exposure to open air, to say nothing of chemical tests. The above solution is used cold the same as cyanide copper.

It has quick action and will plate on any metal that can be plated in cyanide copper solution.

THE RECOVERY OF PRECIOUS METALS FROM JEWELERS WASTE.

An Exhaustive Treatise on the Subject, Including All Forms of Waste, Which Began in January Issue.

By Joseph Cauffman.

(Concluded.)

OBTAINING THE SILVER.

When all is deep gray or blackish, the process is complete, and the metal is to be washed till the water no longer gives, on adding a little ammonjum sulphide, either a black spot in the case of iron, or a white one for zinc.

Before using the silver, however, all traces or scraps of the zinc or iron must be removed. Pick out the large ones, brushing off any silver sticking to them, while holding in the liquid; but, as there are always some small pieces that cannot be seen, the silver, after pouring off the liquid, should be covered with dilute sulphuric or muriatic acid, which dissolves out the sheet metals. As long as gas is formed, they are being dissolved; when this stops, add a little more acid, to see if the action continues, for there may not have been enough. The dish should not be allowed to get hot while this is going on; if there is much action, this may happen, when a little of the silver might dissolve; so it is best to place the dish or crock in a tub of cold water, having the latter running in and out all the time. When the gas stops, and there is no more iron or zinc in the silver, wash it clean, and dry it; then treat as for gold, melting up with a little saltpetre; add also a handful of bicarbonate of soda, in case a little chloride may be left.

COPPER.

In melting copper—either the pure metal, or when alloyed with gold or silver—it should not be allowed to oxidize, or it will not melt properly. Gold and silver are not oxidizable, and are not affected—that is, in regard to quality—by the manner or length of heating, and would not need to be kept covered while in the furnace, except to keep coal and ashes from falling in, and metal from spilling or shooting out. Copper, however, oxidizes rapidly when heated in con-

tact with air, and, after starting to melt, it will get thicker, instead of thinner, and finally solidify, in a crystalline mass. This is due to the formation of the red sub-oxide of copper. Ordinary oxide is black, and floats on top of the melted metal, but the sub-oxide is heavier, and seems to be somewhat metallic in character, for it mixes with the metal—somewhat like an alloy, and does not melt itself, but retards the melting of the metal. The only way to avoid this—or to stop its progress when once commenced—is to cover the surface of the copper with a thin layer of charcoal (broken into pieces about the size of hazel-nuts); this not only keeps the air away, but acts as a de-oxidizer, reducing any oxide already formed and returning it to the metallic state. These precautions are intended for a melt of metal alone; when mixed with the dirt of sweeps, etc., soda is added, as described before, to unite with these intruders; and this mixture, when melted, forms a liquid slag, which acts as a cover for the metal and prevents oxidation.

When the copper is completely melted, it can be poured at once; but, at this heat, the metal gets black as soon as exposed to the air, not giving a handsome ingot. Therefore, if a bright, untarnished ingot is desired, skim the charcoal off the copper before pouring, using a perforated ladle; then add a handful of borax. When this is liquid, pour the metal; the borax covers it, and when cool, can be broken off with a light blow or two from a hammer, exposing a beautiful surface.* Bicarbonate soda can be used if borax cannot be obtained.

REFINING THE SILVER.

This process can be used also on silver, if the latter, when melted, does not show a brilliant, mirror-like surface, which is the only indication of purity. If, instead, it is coated with white or yellow spots or film, add borax—not enough to cover the metal, but only enough so that, when melted, there will be a rim of it against the edge of the crucible, extending about an inch towards the center, and leaving a good surface; for, if covered, the impurities will not burn out. This rim of melted borax absorbs the impurities as fast as they burn out—they float towards the edge of the crucible and disappear. If there is not much foreign metal in the silver, it will burn out quickly; but, if after keeping up this process for half an hour or so after the metal is melted, the surface does not become clear, the silver, if required absolutely pure, must be granulated and dissolved over again and re-purified. It can also be used for mixing in with other melts of gold where silver is needed to make it "part."

MELTING SWEEPS AND POLISHINGS.

In melting sweeps, never put them into a crucible—either a large or a small quantity—without crushing as fine as possible, as large lumps melt slowly, taking more time, heat and flux. They also make the slag thick, and this prevents the gold and silver from passing through the mass and dropping to the bottom; and, if it does not fall, it will remain distributed through the slag, so that the latter must be melted over again—if it is not thrown away by mistake. The slag should be thin as water when melted, to allow the valuable metal to settle properly. It takes considerable experience, combined with some technical knowledge, to know how to bring this about in all cases, as different residues contain different substances, and will not answer to the same treatment. For instance, glass causes trouble, and should be removed if possible. If, however, it is in too small pieces, it must be cared for in the melt, as it causes the slag to be so thick that it will not pour, and of course holds up the metal. In such cases, add plenty of soda and a little sand. It is not alone that these substances are needed, but there should be a good deal of them, for they form a thin slag, which dissolves the glass, which does not of itself melt readily. Sand is also helpful when lime is present.

CRUCIBLES.

Graphite crucibles are the best and safest to use in melting precious metals; sand ones will do, but they frequently crack, causing loss of metal. It is best, with both kinds, to dry them before using, by standing them in front of the furnace, in fact, they should be kept near the furnace, and then they will never become damp. The graphite crucibles are best and safest for all melts of metal, and for many sweeps, but not for getting the silver out of the chloride, as mentioned before. Sand crucibles wear out quicker, but are cheaper; they are usually used for one melt only, whereas the graphite ones will do for many; but they should be cleaned before putting pure metal in, if they had impure metal in before. If a sand crucible cracks, it should never be used again, as this is a great risk; and if a crack is noticed while it is in the furnace, it had better be taken out at once, and the contents transferred to a fresh crucible. If, however, they are not melted enough to pour, put a new crucible into the furnace and stand the first one inside it. If it does not break, the new one is untouched and clean; whereas, if the old one falls apart, the new one saves the metal from loss. This plan is adopted by many at the start; if they do not use the graphite, the sand crucible is risky, so they place the one containing the metal inside another and feel safe.

PLATED WARE.

The process described for clean clippings or broken jewelry can be varied in the case of plated ware. If desired, this can be melted down and parted without adding any silver or copper, as their own alloy will part readily. If, however, for any reason (lack of accommodations, for instance) the operator prefers, he can obtain the gold or silver by putting the jewelry directly into diluted nitric acid; this dissolves the silver, which can be precipitated with salt; it also dissolves all the brass foundations of the material, leaving the gold plating as a thin sheet or foil. This is not, however, pure, but must be mixed with silver or copper, and parted. The main advantage is that a much smaller quantity of metal is to be melted.

PRECAUTIONS.

We might add a precaution to be observed in this work—a very old one, but one that must never be forgotten nor despised. In diluting sulphuric acid, never pour the water into the acid, but the acid into the water. This may seem ridiculous to those who do not understand the reason, which is this: sulphuric acid (oil of vitriol) becomes very hot when added to water; if the water, however, is in excess, and is cold, this heat is overcome. But if water is poured into acid, all the acid, we might say, goes after the water at once—much like a cent thrown into a crowd of street urchins, and the result is much the same—a fight. And it does not help at all to add much water, for here the action is increased, and the mixture may boil and squirt the liquid into the face and eyes of the workman, causing serious injuries. *Pour the acid into the water*—have the latter cold, and pour slowly—and stir while pouring.

* A tarnished ingot can also be cleaned by dipping it, when cold, into cold, dilute sulphuric acid. The acid may need warming in some cases.

The above covers fairly well the usual field of precious metal residues and the methods for handling them. There are other kinds of material, some of which cannot be treated in any of these ways; and there are also kinds of waste that need practically no handling. For instance, exhausted incandescent light bulbs contain each a small—very small—piece of platinum wire, and it is only necessary to break the lamp up to get this wire. This is simple, but very tedious and slow. The brass bases are also kept and sold.

CURIOUS RESIDUES.

There are also residues that are not only strange and curious, but even uncanny—old fillings and filling material, and even false teeth! Many a time has the writer been given a box of these gruesome articles, which were thrown into a big iron mortar and pounded till reduced to a fine powder, and the minute platinum rivets picked out. These were then tested with nitric acid, which leaves platinum untouched; but occasionally some were seen to dissolve with a green color, for even here is the field invaded by imitations, and the buyer finds that he has paid the price of platinum for a handful of German silver.

The soft, white, silvery amalgam used by dentists for large cavities in the back teeth, called "plastic filling," becomes hard very soon, and forms a very durable surface for mastication. Thus too, it hardens quickly in working, and any material left over from the filling is useless for the dentist's work, for it is soon as hard as iron. This is accumulated in large lots, and the mercury in it is distilled off in an iron still; but this kind of waste is not desirable, for it furnishes a very impure mercury, that will not become clean with repeated distillations and cleanings; and the metal residue is very difficult to work. It consists largely of tin, and when the alloy is dissolved in nitric acid, the tin does not go into solution as a nitrate with the silver, but is converted into an insoluble oxide—a white powder, which is so light that it will not settle, but remains suspended in the solution, like milk. It cannot, therefore, be poured off nor can it be filtered, for this oxide is so extremely fine that it will even run through the filter paper so that the operator is no better off than when he started. And if we tried to precipitate the silver without first filtering off the tin oxide, the latter would come down with the silver chloride when the salt solution is added. The only way to do, therefore, is to evaporate the mixture to dryness on the water-bath, which renders the tin oxide solid and granular, so that on adding water and redissolving the silver nitrate the latter can be filtered off, when the tin oxide will stay on the filter; the silver in the filtrate can be precipitated with salt solution, as usual, while the tin oxide, being worthless, is thrown away. To make this operation perfectly successful, after evaporating to dryness on the water-bath, the dish should be put on a sand-bath, as it must be well heated to render the tin oxide granular enough to stay on the filter; the heat of the water-bath is not sufficient to accomplish this. The mixture must not, however, be heated high enough to melt the silver nitrate.

When there is gold in the alloy, it will remain with the tin oxide, and in this state it is almost impossible to recover it; all processes that could be used are so long and tedious that they would in the end cost more than the gold would be worth. Usually, however, there is so little gold in these alloys that it need not be taken into consideration.

The End.

PLATERS' WRINKLES.

By C. H. Proctor.

(Continued from April number.)

The pitting of nickel deposits is usually caused by a deficiency of metal in solution, or too much free acid; either case produces an excess of hydrogen gas upon the articles which appears to burn into the surface of the deposited nickel producing pitting. The remedy is to add nickel sulphate 2 or 3 ounces to the gallon if caused by deficiency of metal. If caused by too much free acid, add carbonate of nickel; this is best added in the plastic form. Plastic carbonate of nickel is produced in the same manner as plastic carbonate of copper by adding two pounds of carbonate of soda to each gallon of sulphate of nickel dissolved in boiling water. After precipitation filter carefully and rewash with hot water several times. One-half to one ounce of plastic nickel carbonate will usually overcome the free acid in a nickel bath unless added in excess.

If at any time sulphuric acid has been added to a nickel bath in excess it is well to remember that 3 ounces of 26% water ammonia will neutralize 1 ounce of 66% sulphuric acid.

Salammoniac or common salt added to a nickel bath in the proportion of 2 ounces to the gallon will oftentimes bring up a white color to the deposit when other methods fail.

Equal parts of nitric acid and water will dissolve silver much faster than when the acid is used alone, especially when the mixture is slightly heated upon a water bath.

Muriatic acid gives better results than salt when precipitating chloride of silver from the nitrate solution. The reason is that nitric acid is formed by the reaction, and this is more readily washed out than nitrate of soda that is produced when salt is used.

The salts of copper and zinc for plating-room use can readily be prepared from the scrap sheet copper and zinc that usually accumulates in many metal establishments. The copper can be dissolved in the same manner as silver with equal parts of nitric acid and water, or the common aqua fortis of commerce will answer the purpose. When a saturated solution is prepared precipitate with sal soda and wash in the usual manner.

In a like manner chloride of zinc may be prepared by dissolving sheet zinc in muriatic acid until the solution is saturated with the metal and no more action takes place. This is the usual soft solderers' acid; by adding cyanide of potassium to water and producing a fairly concentrated solution of cyanide and then adding all the chloride of zinc, the cyanide will dissolve. A good strong solution of zinc can be prepared that can be added to the brass or bronze solution with satisfactory results.

In bronze plating considerable arsenic can be used in the bath to produce a satisfactory color; this gives a similar color to the deposit as tin does in the cast bronzes of the foundry.

(To be continued.)

WAX CASTING FROM GELATINE MOLDS.

By D. J. Lemal.

To cast from gelatine molds the mold, after being endurated with alum is well greased or oiled, then the brush is well wiped off by pressing the oil out in a piece of paper and mopping or soaking up the oil, again wiping the oil off the brush all the while until the mold seems not to have any free oil left, as the oil will double up in the mold when casting and cause wrinkles. Small molds that can be handled with one hand can be filled up with melted wax and poured out quick which will leave a film or skin of wax (this must be done quickly, no sooner in than out again), then keep on building the thickness with a brush, laid on light, as brushing it back and forth will make the wax spongy and laminated.

The wax should be at a temperature that the finger can be dipped in to the first joint without causing any discomfort, such temperatures being about 150 degs. F. Of course, the temperature is hot enough to melt the glue, but the film cools or sets before the heated glue underneath has a chance to run and keeps the glue in shape or position. Judgment should be used not to put on too much wax with the brush at first as to melt the film through, and yet still have enough on to incorporate the hot with the cold wax (film) after a reasonable thickness is built on, according to the size of the mold, as a large mold takes so much more wax and keeps warm so long that it may remelt the foundation of wax first put on.

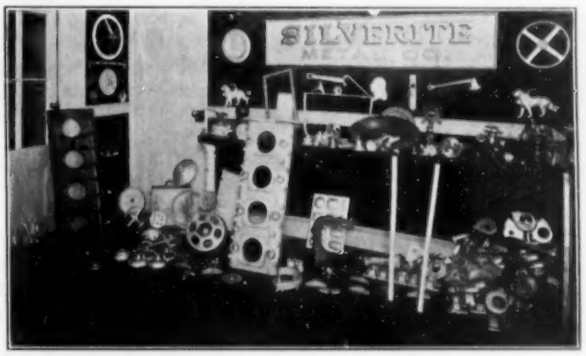
In cases where the mold is of such a nature or make that the wax cannot be painted in with a brush, the process of filling and emptying will have to be resorted to, but the first coat must be quite hard before the second is added. Large molds are usually painted, that is, the wax is applied with a brush with as few strokes as possible and running the wax on all sides into a thin film so that the surface can be covered by adding the fresh brush full of wax on the film part, and this way avoid making a joint, or captivate air or free oil.

Virgin beeswax (yellow beeswax) when new shrinks more than when it has been remelted several times. Venetian turpentine added to it in a small quantity, say, 1 ounce turpentine to a pound of wax, will keep it from shrinking. This has to be experimented with to get it at the non-shrinking point. A good way is to get a piece of cast plaster plate cut a half inch wide, same in depth, about a foot long, soak this in water until it does not absorb any more, soak up the free water with a sponge until it seems to be quite dry, fill it up with the melted wax experimented with, and when cold the shrinkage can be seen. A few drops of glycerine to each pint of gelatine while cooking will render it pliable.

SILVERITE, A NEW METAL.

A new development in the alloying of aluminum with other metals has just been accomplished by the production of "Silverite." This metal is something entirely new and is composed of a mixture of aluminum and copper, zinc and steel in varying proportions according to the requirements. The introduction or alloying of steel with aluminum is somewhat startling and at first thought seems to be impossible, yet the makers of "Silverite" have succeeded in doing just this thing, and the resulting metal has a specific gravity of 3.1, a tensile strength of from 40,000 to 45,000 pounds per square inch and a compression resistance of 100,000 pounds.

The color of the metal is silver-white, hence its name; it does not tarnish in the air and it is not affected by



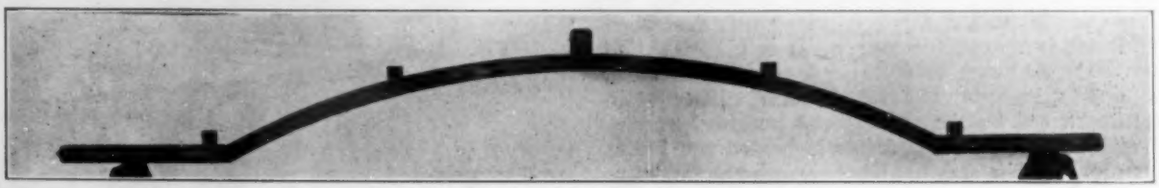
ARTICLES CAST IN SILVERITE.

weak acids, and only slightly by salt water. The alkalies however, attack it, as is true with all aluminum alloys. Made up into articles for general everyday and ornamental use such as aluminum is employed for, it has the additional advantage of lower gravity, greater strength, better color, easier to machine and electroplate, and is really a better metal in every way.

The greater tensile strength of "Silverite" is due not only to the constituents of the alloy, but also to the fact that it is cast in molds made of a composition material, which has the advantage of withdrawing the heat rapidly from the metal, thereby reducing the crystallization to a minimum and making a sound and solid casting of close, even grain. The illustrations show the wide range of articles made of "Silverite" by the Silverite Metal Company, of 25 Fulton street, Brooklyn, N. Y., who will gladly answer all questions regarding this wonderful metal.

REMARKABLE COPPER CASTING.

The casting shown in the illustration was made at Birmingham, Alabama, plant of The Ajax Metal Company. The casting is 19 feet 5 inches long, cross section 3¾x5 inches and cored to make the wall ⅝ inch thick all over. It can be readily understood that the difficulty in making this casting is due to its length with its small cross section and core. The casting weighs 2900 pounds and was poured from five pots of metal, filling the mould rapidly.



REMARKABLE COPPER CASTING 19 FEET LONG.

This casting was made for the U. S. Steel Corporation for one of their southern plants, being referred to as "Copper Chills for Port."

BOTTOM-POURED CRUCIBLES.

For some classes of work, the bottom-poured crucible possesses advantages not shared by the style of crucible ordinarily used. For instance, in the making of castings from white metal or aluminum the bottom-poured crucible is advantageously used. By its use, a casting is secured that is practically free from all impurities. Because of this feature, the bottom-poured crucible has been aptly called "self-skimming." Naturally the fluxes and other impurities rise to the surface of the molten metal and remain there. The metal being poured from the bottom, these impurities have no opportunity to get into the casting but sink only with the level of the metal and are finally left in the bottom of the crucible.

In the ordinary shape of crucible, where the metal is poured from the top and where a comparatively wide surface is exposed to the air, more or less oxidation takes place. As the pouring proceeds, practically the entire contents of the crucible is exposed to the air in a wide surface. With the bottom-poured crucible this condition does not obtain. While a longer exposure of the surface level results, this surface (considered as an imaginary film) remains intact and prevents like exposure to the remainder of the contents.

FIG. 1. SECTIONAL VIEW.

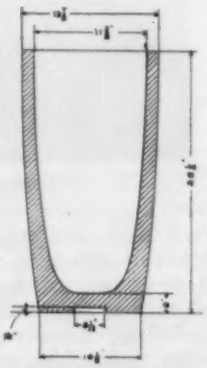


FIG. 2. M. R. V. CRUCIBLE.

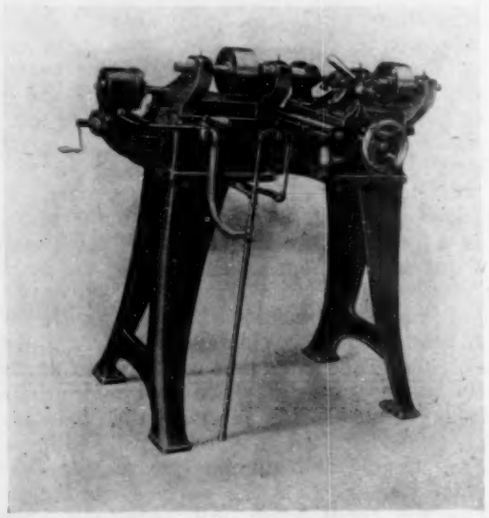
The cut appearing herewith shows the construction of the Dixon bottom-poured crucible manufactured by the Joseph Dixon Crucible Company, Jersey City, N. J. This bottom-poured crucible may be likened roughly to a teapot in which the "snout" is within the body rather than extending separately. It will be readily seen how this arrangement well protects the contents from exposure to the air and how the surface is maintained unchanged in the pouring as previously explained. Many concerns that find it necessary or desirable to get pure, unoxidized metal castings are using these bottom-poured crucibles. A description of an earlier style of this crucible was published in THE METAL INDUSTRY, April, 1903.

This company are also making a new crucible of the shape shown in Fig. 2. This crucible is intended for the use of the "M. R. V." furnace, which was described in THE METAL INDUSTRY for March. It is calculated to run from 70 to 80 heats, as it never leaves the furnace, and is not subjected to the sudden changes in temperature caused by the pulling and pouring process. As is well known, when a crucible is heated red hot it becomes more or less elastic and therefore the pressure of the molten metal inside, and the squeezing of the tongs outside, causes a certain amount of distortion. Where the crucible is never removed from the furnace it has all the support of its resting blocks and braces at the critical stage and no undue torsional and lateral strains are experienced.

As the design of this crucible is entirely new, and the work for which it is intended is so exacting, the material of which it is made and the manner of construction are most important considerations. This company make a superior grade of graphite for lubricating purposes, which is fully described in a recent catalogue which is sent free upon request.

FOUR AND A HALF BATH COCK MILLER.

The machine here shown in cut is designed for milling the flats of the hexagons of 4½-inch bath cock bodies. This machine is manufactured by the Hannifin Manufacturing Company of Chicago, Ill., and marks a decided advance in the methods of handling this material.



FOUR AND A HALF BATH COCK MILLER.

Milling the hexagons of the bath cock bodies give the cock a better shape and finish, the operation also cuts down polishing cost, as they are then ready to be polished with a flour emery wheel while with the old method three wheels are used. Another large item is that in milling instead of grinding, clean metal only is removed and sent to foundry. It has been proven that this operation will save metal and labor to the extent of paying for the machinery of the complete bath cock. The capacity of the machine is 500 complete bodies in ten hours.

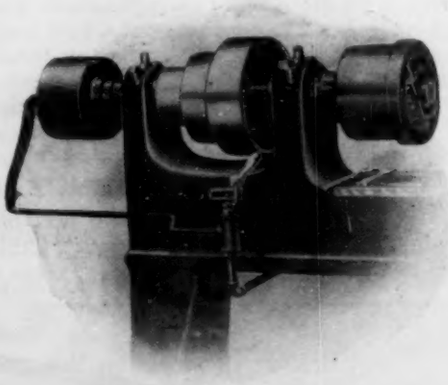


FIG. 2. THE STAR CHUCK.

This company also manufactures a complete line of aerochucks, friction chucks, patterns, molding machines and gate valve seating machines. We illustrate one of the most important of the aerochucks, the star chuck, Fig. 2, which is operated by the most up-to-date and well-known system of compressed air. Fig. 3 shows some of the irregular shapes readily held in position by these chucks.

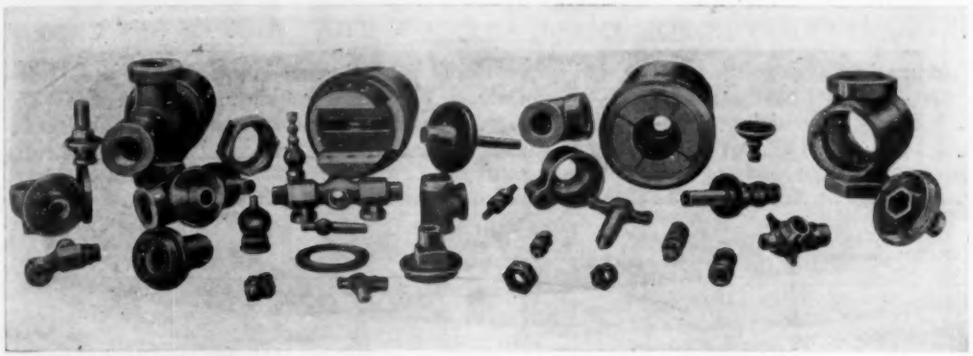
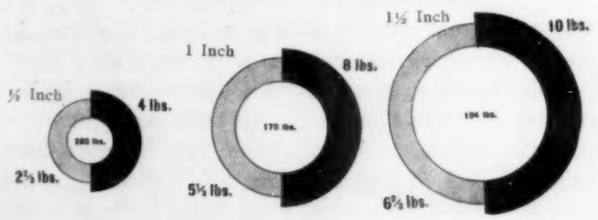


FIG 3. SOME OF THE SHAPES HELD IN THE AEROCHUCK.

LEADAMANT PIPE.

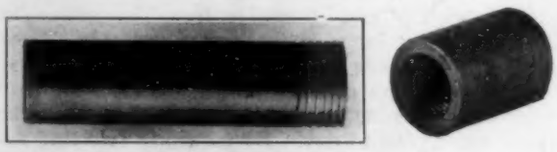
A new article in the way of a lead pipe is the lead and antimony pipe now being manufactured by the National Lead Company. This pipe is called "Leadamant" and is composed of pig lead and regulus of antimony, thoroughly mixed in definite proportions, which vary according to the purpose for which it is to be used.

Leadamant pipe is stronger and harder than lead pipe and consequently can be made of thinner wall



Comparison of relative thicknesses of Leadamant Pipe and Lead Pipe of equal strength. Figures show weight of pipe per running foot and working strength, using a factor of safety of five.
Leadamant Pipe—Shaded. Lead Pipe—Black.

and be of less weight per foot. The cut shows a comparison of the two pipes in this particular, as for instance a ½-inch pipe to hold 260 pounds pressure will weigh 4 pounds per foot for regular lead and only 2¾ pounds per foot for leadamant. Leadamant can be



LEADAMANT PIPE THREADED.

threaded, drilled and tapped (see cut). This gives it another enormous advantage over lead pipe, in that it obviates all wiping and soldering of joints; whereas if it becomes necessary to solder it, this can be done as readily as with any lead pipe. Leadamant pipe is practically unacted on by hot water and does not sag or disintegrate.

A POLISHING LATHE MADE LIKE A MACHINE TOOL.

THE WHITNEY JACK.

A machine for polishing, buffing and grinding that has been built to answer all the requirements of the latest and most up-to-date shop practice is the jack shown in Fig. 1. This lathe is the product of the New Britain Machine Company, of New Britain, Conn., and has only been developed by them to its present high standard after long and expensive experience. The details of its construction have been arrived at by trial, elimination and survival of the fittest. The first important feature of this jack is belting downward, thus at one and the same time satisfying sanitary and economical laws, resulting in the one case in a clean and healthy polishing room free from dust and danger of belt entanglement, and in the other in the elimination of all counter shafts, clutches or loose pulleys and thereby ensuring a long life of spindle.

FIG. 1. AT REST.
Showing spindle pulley resting on brake, belt relaxed from driving pulley.

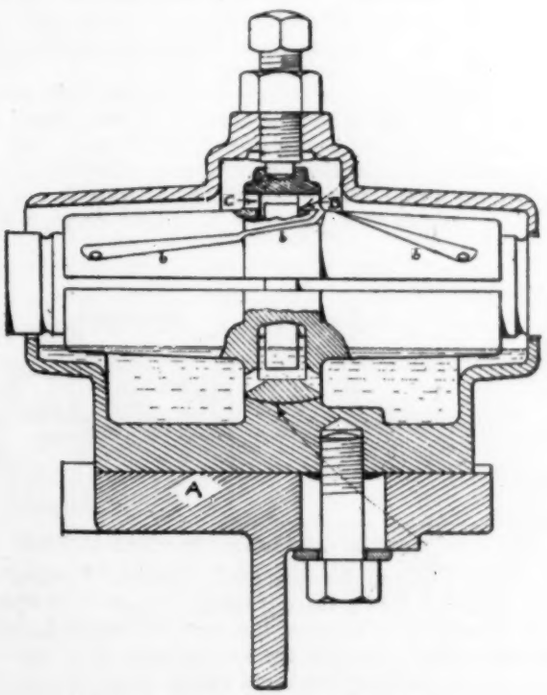


FIG. 2. DETAILS OF BEARING.

The second feature is the simple method of starting and stopping; this scheme will be readily understood by referring to the cut. A third and very important feature of this machine lies in the novel and effectual method of

lubrication. Details of the bearing box and oil chamber are clearly shown in Fig. 2. By means of fixed rings made solid with the spindle and grooves in the shaft to prevent loss, the oil is distributed in a copious and positive manner, and is used over and over. No air can possibly become entrained, hence, there is no frothing, no leaking of oil and a limpid flow is guaranteed at all times. The faster the spindle runs the more oil is furnished to the bearing boxes. The boxes being self-adjusting, together with generous lubrication, permits of the use of a small and easy-running spindle, and makes cool running under heavy work a certainty.

AN AUTOMATIC CLEANING APPARATUS FOR SMALL ARTICLES THAT ARE TO BE PLATED.

A new machine for the automatic cleaning of small articles of brass, etc., that are to be plated has been perfected recently by the U. S. Electro Galvanizing Company, of 1 Park avenue, Brooklyn, N. Y. This device, as will be seen from the illustration, Fig. 1, consists of two sheet iron drums revolving in a wooden or iron tank. The articles are first placed in the drum, which revolves in a caustic soda solution. The solution enters through the perforations of the rim of the drum and the articles are thus cleaned from grease, dirt and scale.

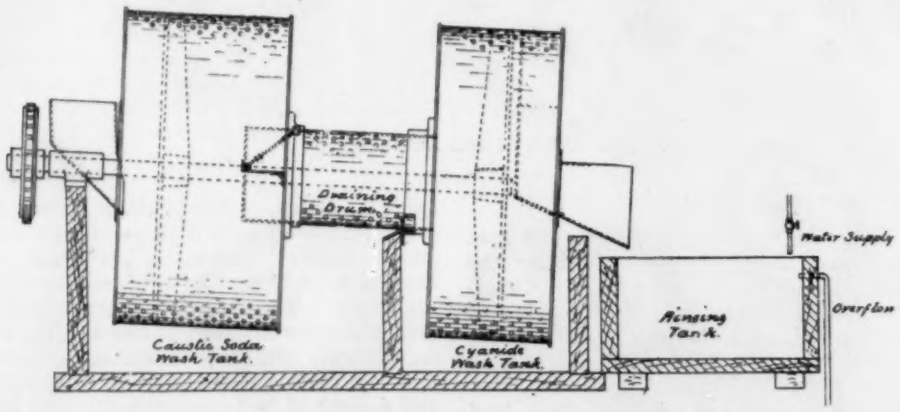


FIG. 1. AUTOMATIC CLEANING SYSTEM.

After the articles have been rolled for a certain length of time in the soda, a slide is opened on one side of the drum and owing to its mechanical construction and inclined position the articles are gradually discharged into the draining drum, where the excess of soda is drained off. The articles then pass into a similar drum, where they receive a thorough treatment in cyanide of potassium and go from here to a rinsing tank. All of these operations are entirely automatic, the material is not handled from the time it goes into the caustic soda drum until it passes out perfectly cleaned and ready for plating at the other end. Fig. 2 in the illustration shows the continuation of the automatic idea through the plating process. The machine here depicted is the well-known plating barrel made by this concern and described in the February number of THE METAL INDUSTRY. By combining these two appliances the articles can be automatically cleaned, washed, plated, washed and dried with a minimum of labor and maximum of output. The various operations being thus performed would be washing in caustic soda, draining, washing in cyanide, rinsing, plating, washing, drying by steam or by sawdust, and in the event of this last separating from sawdust.

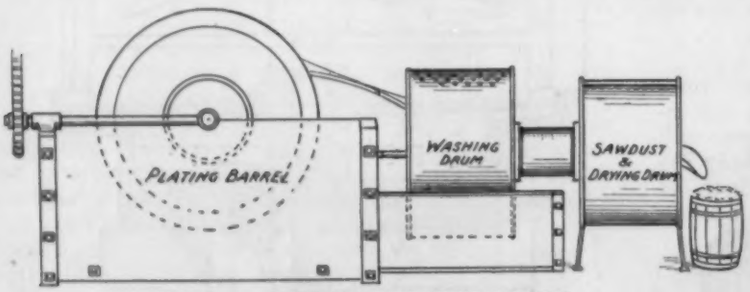


FIG. 2. AUTOMATIC PLATING SYSTEM.

WOODS FOR PATTERN MAKING.

The two great natural pattern woods known to the trade are white pine and mahogany. In the United States white pine has been most generally used owing to its less cost, while in Europe mahogany has more nearly approximated the cost of white pine and has therefore been within the reach of consumers for this purpose. As not all kinds of white pine make good pattern wood, so not all mahoganies are suitable for the purpose of pattern making, but when a selection is made of the close texture, straight grain mahogany, there is nothing superior for patterns. It possesses all the qualities of the pine with the added advantage of greater durability, and for small, fine patterns, the lines can be worked finer.

The drawback encountered as to cost has been eliminated by Lewis Thompson & Co., Inc., of Philadelphia, who are large importers and manufacturers of mahogany, owning large mahogany forests in Mexico. They have developed a grade known as mahogany pattern lumber which conforms to the price of white pine and is less in cost than the highest grade of white pine to-day. By carefully selecting such logs as they decide will make the straight grain, firm texture required in pattern wood, then manufacturing and carefully drying, they have been able to accumulate a stock of this special mahogany pattern wood and treat customers the same as in white pine shipments.

The world is threatened with a platinum famine, so dispatches from Russia say. The price of this metal is rising rapidly.

OLD SERIES
VOL. 15, No. 5.

NEW YORK, MAY, 1909.

NEW SERIES
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THE METAL INDUSTRY

THE CONSOLIDATION OF

THE ALUMINUM WORLD
THE BRASS FOUNDER AND FINISHER
ELECTRO-PLATERS' REVIEW
COPPER AND BRASS

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CONTENTS

THE FOUNDRYMEN'S CONVENTION.

The week of May 17 to 22 will witness the third convention of the American Brass Founders' Association with its affiliated societies. The main features of this convention are given in an exhaustive report in other columns of this number of THE METAL INDUSTRY and therefore it is unnecessary to repeat them here. We merely wish to add a few remarks to explain in a measure what we think about conventions in general and this one in particular.

The presidents, secretaries and other officials of the various societies, have devoted all of their energies for some time past to make this convention one of the biggest and most successful ever held, not only in the brass field, but also to act as an example and incentive to other lines of industry.

These gentlemen have done their best and it remains now with the parties most interested to prove the pudding, like the man who, after doing fair justice to a good meal, leaned back and said, with a sigh: "Now, digesters, do your duty." Let's all go to Cincinnati and be digesters, there will be food there to be digested. There will be new methods, new processes, new appliances, and we hope new members in plenty.

We have heard opinions recently expressed in relation to conventions in which doubt was entertained as to the advantages to be gained by attending. Our idea of this is that a convention is for the purpose as its name implies, "A convening or gathering of kindred spirits," of fostering and promoting the general welfare of those concerned. A convention planned on the broad lines as this one cannot fail to produce the greatest good to the greatest number.

"There is nothing new under the sun," is rather an ancient observation, and to a certain extent may be true, but it is equally true that a great many of us may be benefited in learning over again something we may have forgotten. The Ancients made brass and bronze, we conclude from evidences found from time to time; and we have been striving for many years to reproduce some of these old effects.

Let's go to Cincinnati and see if any of the carefully guarded secrets of the ages have been exposed. Let's go and see if some other fellow has found a better way to do this or that than we have. Let's talk it over anyway and see if we can get some light on a knotty point that has puzzled us, or see if we can help out some one else.

Let's go and see if we can meet that chap that we have been nursing a little grudge against because he snapped an order we thought was "ours." Let's hunt him up and find out perhaps that he is as good as we are, only a little sharper, and maybe by rubbing elbows with him get a

little "edge" on ourselves and see things in a different light. So let's all go to Cincinnati in the "Hello there" spirit and do all we can to make the convention a social as well as a technical and commercial success.

BRASS FOUNDRY PRACTICE AND MOLDING MACHINES.

In another part of this number of THE METAL INDUSTRY we publish two articles on extremely interesting and important subjects. The first, a description of the manufacture of the globe valve, is written by a man "who knows and does things." Mr. Reardon is the superintendent of the brass foundry of the Westinghouse Electric and Manufacturing Company. This foundry is the largest brass foundry in the United States, and consequently the practice followed at this plant is conceded to be at least up to date and progressive.

To any one not familiar with the foundry business, the ordinary brass valve we see every day on our radiators, steam and gas pipes, looks like a simple proposition, but to the brass founder this class of material is a stumbling block and "betè noir." There is perhaps no alloy used in the brass foundry that causes more trouble in its manufacture than this "steam metal." The requirements that this metal has to meet are so exacting that many a foundryman has given it up in despair.

Steam metal must stand steam, air and water pressure; it must not readily corrode; it must be free working in the lathe, drill press and milling machine; it must be readily polished and plated; it must have a pleasing color if it is desired to finish the valve "natural," and above all it must be entirely free from all blow holes and other imperfections.

Mr. Reardon very skilfully treats all of these difficulties in his article, which is well worth careful perusal and study. To any one interested in the manufacture of this class of work this article will certainly prove valuable, and the directions given may be trustingly followed with a certainty of getting good results in the shape of good sound castings.

The other article we wish to bring to the attention of our readers is, "Molding Machine Pitfalls," by Wm. H. Parry, superintendent of the National Meter Company. This is a dispassionate review of the subject of the molding machine and its relation to the brass foundry. Mr. Parry gives a clear and accurate account of the various types of molding machines, giving their good and bad points in an emphatic manner, with his reasons for such opinion. His conclusions are drawn from actual experience, and for that reason alone should have weight with any one contemplating the installation of molding machines.

NICKEL ANODES.

We publish in our Criticism and Comment column of this number of THE METAL INDUSTRY, the last bulletin of the war of nickel anodes. That there is still plenty of life in this discussion can be seen from a perusal of Mr. Brown's letter. The cessation of hostilities is due rather to a turning of the opposing parties' attention in another direction than to a lack of ammunition. The subject of "cleaning or not cleaning" nickel anodes is, as has been suggested by THE METAL INDUSTRY, a fit one to be debated upon at the coming meeting of the newly-organized National Electroplaters' Association.

RECOVERY OF PRECIOUS METALS.

In this number of THE METAL INDUSTRY we print the conclusion of the article on recovery of precious metals from jeweler's waste by Joseph Cauffman, which began in the January number. This article is both interesting and instructive and is especially valuable owing to the fact that it is based upon the actual experience of Mr. Cauffman. There are probably a number of concerns that have no specially installed plant for this purpose; and to such, a good deal of the information given in the article will come as a revelation as to what can be done in the way of handling waste material.

It is not an uncommon thing to find in some plants a leak going on in the manufacturing processes which is not even dreamed of by the parties most interested, and is usually set down to expense of production. By following out in whole or in part the scheme outlined in the article, a saving can very frequently be effected surprising in its amount.

So far as we know there has not been anything published on this subject, that embraced such a wide field as does this résumé by Mr. Cauffman.

Clearly and concisely the writer carries the process along from the gathering of the waste material, either sweeps from a jewelry factory or a carpet from the dentist's parlor, to the final result in the shape of a lump of puré metal. Technical and puzzling terms and reactions are carefully omitted, and the description of processes are well and entertainingly written, so that even the amateur smelter and refiner can, without trouble, carry on the operations to a successful and satisfying finish.

The main point in performing work of this character is in knowing when one is on the right track, and what is even more important, of the assurance of a helping hand when an unlooked-for complication arises. This is just what Mr. Cauffman's article is intended to do; a guide for the successful recovery of anything of value in what might be called waste material.

THE METAL INDUSTRY would be glad to hear from its readers any suggestions or criticism of the article that may occur to them, and also to explain any points not thoroughly understood.

NEW BOOKS.

Electro-deposition of Metals, 6th Edition, Revised. Translated from the German Edition of Dr. George Langbein, with additions by William T. Braunt, Editor of the Techno-Chemical Receipt Book. 8vo., 696 pages and 162 engravings. Price $4.00. H. C. Baird & Company, Philadelphia, Pa.

The sixth edition of this well-known book follows the general scheme and scope of the fifth edition, but a thorough revision has been made, and a good deal of matter added.

REACTIONS IN NICKEL PLATING SOLUTIONS.

To the Editor of THE METAL INDUSTRY.

Last month I made the statement that I would not continue the discussion which has been going on in your valuable paper, but I now feel that Mr. Blassett's remarks in the March number merit a reply. I find that I am prone to error through taking too much for granted, as in the case of the single nickel (nickel sulphate) solution. I have never conducted experiments with such a solution without the addition of suitable conducting salts and I assumed that as nearly all platers use such agents, their use in this case would be understood. I did not give details about the solution for the reason that I am not prepared at the present time to publish them.

With reference to Mr. Blassett's comments on Mr. Hall's article in the October METAL INDUSTRY, I would remark that as quoted by Mr. Blassett an impossible decomposition takes place. It is obvious that the decomposition of nickel sulphate cannot under any condition yield NH and (SO_4) Ni, as this salt has the composition $NiSO_4:7H_2O$ and contains no ammonium radicle (NH_3). If Mr. Blassett will carefully read the article he will find that it is previously stated that alkali salts (in this case ammonium salts) were added to the nickel sulphate solution. This accounts for the NH. I might also call attention to the fact that this sentence in Mr. Hall's article is inaccurate in stating that the (SO_4) Ni are anions. This is obviously inaccurate, as any plater must know that Ni (nickel) becomes positively charged and passes to the cathode, being therefore, a cathion and not an anion. Mr. Hall's article contains another error (probably due to translation) when he says that the double sulphate of nickel is more soluble than the single sulphate. The opposite is true as the double sulphate dissolves in 5 parts of water at 50° C., while the single sulphate requires only 2 parts of water at the same temperature.

With reference to the article by E. F. Kern and F. G. Fabian, a few lines of which Mr. Blassett quotes. In order to show how easily one can be misled by not thoroughly perusing an article, I will quote them a little more fully and show that Mr. Blassett has given a wrong interpretation and therefore a wrong idea to your readers. The article says: "The presence of free acid in nickel chloride, nickel sulphate, and nickel fluosilicate electrolytes causes very low cathode efficiency, whereas the anode efficiency was in most cases over 95%. By continued electrolysis the free acid was neutralized and the cathode efficiency increased." I have never to my knowledge advocated an acid (the article refers to free sulphuric acid) single nickel electrolyte and I cannot see what point Mr. Blassett tried to make. I will quote further from the same article: "The presence of sodium salt (they used sodium sulphate) in the nickel chloride electrolytes was not beneficial, whereas its presence in the neutral sulphate electrolytes reduced the E.M.F. over 60%, and also caused the current efficiency to approximate 100% when the temperature of the electrolyte was about 60° C., at room temperatures its presence was of no great benefit." Tables are given, showing a cathode current efficiency of 102.2% at 20° C. in a neutral nickel sulphate (single nickel) solution. The statement that sodium salts were of no great benefit at room temperatures is in my opinion an accurate one, as they merely refer to sodium sulphate and not to the entire class of sodium salts. The tables also show a cathode current efficiency of 10.2% in a neutral nickel sulphate electrolyte containing a sodium salt (sodium sulphate). The authors attributed this low efficiency to too high a E.M.F. It must be obvious to everyone that the above quotations on which Mr. Blassett based his positive statements about the uselessness of single nickel solutions, do not give grounds for such out-and-out comdemnation. Personally I feel that the article referred to does not give a sufficiently thorough study to the nickel sulphate electrolyte, at least not sufficiently thorough to cause anything more than a little uncertainty or possibly a desire to investigate the matter a little more thoroughly.

One more point that I cannot accept in Mr. Blassett's letter is his reference to the solubility of the nickel anodes in electrolytes containing corroding salts. With pleasure I refer him to his own quoted authority, the afore-mentioned article by Messrs. Kern & Fabian. They say: "The addition of 5 to 10 grams of sodium chloride per 100cc. of nickel ammonium sulphate electrolyte reduces the E.M.F. and also causes the deposit to form more regular, more adherent and tougher, and the anode to dissolve more uniformly." I have found that the addition of chlorides to nickel solutions has this effect and many other authorities have reported the same thing. On what does Mr. Blassett base his statements?

PERCY S. BROWN.

New York, March 27, 1909.

ARSENIC IN A BRASS SOLUTION.

TO THE EDITOR OF THE METAL INDUSTRY:

Arsenic when used in conjunction with understanding is, I believe, if not a necessity, at least a large factor in maintaining a brass solution, which is required to produce a deposit of uniform appearance day after day, and yet there are many platers who have discontinued its use, not through the fault of the arsenic, but through their inability to control its action, simply on account of their lack of proper manipulation. I believe that had they devoted one-half of the thought and experimenting they have given to bisulphite of soda or ammonia as a brightener, the conclusions drawn might have been greatly modified, and the use of arsenic been more in favor with those who condemn its use.

All additions to a solution have their faults, and the question that confronts the plater is always: Are the advantages more than enough to overcome the bad effects they produce? Bisulphite of soda forms in a brass solution, sulphate of soda, which is an inert salt, and loads the solution with a substance that makes, if long continued, an irregular deposit. Unlike arsenic, it is almost impossible to remove this sulphate, and in time necessitates the throwing out of a portion of the solution, yet we use it because the good effects more than counterbalance the evil it produces. An excess of ammonia is troublesome to overcome and requires much time, while arsenic, if completely dissolved before adding it to the solution, is more easily removed than any other chemical used for brightener, without disturbing the balance of the solution, and the additions are so minute that the cost is materially lessened. After using arsenic in a brass solution for a number of years, I am still open to conviction if I am in error, but I will, until convinced, advise the platers to use arsenic to brighten and even up the color of a brass deposit.

BENJ. W. GILCHRIST.

Woodhaven, February 10, 1909.

MOLDING MACHINES.

To the Editor of THE METAL INDUSTRY:

In reference to Mr. Hart's article on moulding machines, published a few months ago, I will say Mr. Hart has covered the ground very well in most of his article. He says one thing that I think is a mistake. And that is, he says the model machine, in order to be successful, should be simple in construction and operation, and cost of operation and maintenance should be such that ultimate cost of finished product should be reduced. And he says no machine on the market to-day satisfies this demand.

I think there are several machines on the market that are simple in construction. One of them is described in September, 1908, number of THE METAL INDUSTRY—the 20th Century moulding machine. Which is simple in construction and gives satisfaction, also the "Modern" and the "Berkshire."

J. F. WEBB MFG. CO.,
J. F. WEBB, President.

Davenport, Iowa, April 23, 1909.

Abstracts

A REVIEW OF FOREIGN METAL PUBLICATIONS.

NEW FORMULA FOR NICKEL-PLATING BATH.

The following formula for a nickel-plating bath is given by the Metall-Technik (vol. 34, page 410) as an improvement over older formulae. It is said that the nickel deposit is beautifully white and unusually tough and that the nickel deposits well, even in deep depressions of the surface of the article. The formula, given in parts by weight, is:

Water	100
Nickel ammonium sulphate, chemically pure	8
Ammonium sulphate	2
Magnesium sulphate	1

In making the bath the three salts are dissolved in half the above quantity of hot water and then the rest of the water added cold. After the solution has cooled strong ammonia is added very carefully until the solution will only slightly redden blue litmus paper. During use the bath should be tested every week with the litmus paper and if found to be too strongly acid it should be treated with ammonia as above described. In all nickel baths the nickel does not dissolve as rapidly at the anode as it is deposited at the cathode and therefore the nickel contents of the bath gradually decreases, yet the other salts in the bath remain practically unchanged, only losing the small amount which adheres to the plated objects when they are removed from the bath. Therefore when the bath becomes weakened through long use it should be strengthened with a mixture of salts containing relatively less of the ammonium and magnesium sulphates. Any water that evaporates should be replaced, thus keeping the volume constant; if the gravity of the bath becomes less than 7.5 degs. B., enough of the following mixture should be added to bring the gravity back to that figure:

Nickel ammonium sulphate	100 parts
Ammonium sulphate	5 parts
Magnesium sulphate	1.5 parts

The solution should be thus strengthened about every six weeks. The temperature of the bath should be 63 degs. to 70 degs. When the articles to be plated are placed about six inches from the anode, the voltage used by the bath should be from 3 to 3.5 volts.

MANGANESE BRONZE.

Acording to an article by Mr. M. Escher in Metallurgie, vol. 5, page 567, Parson's Manganese Bronze is beginning to be extensively used on the continent of Europe, especially in the construction of turbines and centrifugal pumps. The composition of the metal varies considerably, but the most commonly used alloy contains about the following percentages:

Copper	58.0	Aluminum	1.0
Zinc	38.5	Iron	1.0
Tin	1.0	Manganese	0.5

As a test of the durability of manganese bronze against mechanical corrosion plates of various metals were exposed for 50 hours to the action of a sand blast and the decrease in weight determined. If the decrease in the weight of the plate of manganese bronze be taken as 100 then the decrease of weight of the other metals would be represented by the the numbers shown in the following table:

Bearing metal (copper 86%, tin 14%)	155
Ordinary bronze (copper 88%, tin 12%)	126
Cast iron	164
Steel plate	179

It would thus appear that steel is the least durable of the above metals for use in the construction of blades of water turbines or centrifugal pumps which are to be operated with water containing sand in suspension.

NEW ALUMINUM ALLOYS.

The Metall-Technik (vol. 34, page 396) contains a description of three new aluminum alloys. The first alloy is said to be an excellent bearing metal, offering very little friction and being more durable than the ordinary copper alloys used for the same purpose. The percentage composition of the metal having the most desirable properties is as follows:

Copper	1.20	Antimony	14.00
Tin	12.00	Aluminum	35.00
Lead	0.80	Zinc	37.00

In making this alloy the copper is first melted and the other constituents are added one at a time with thorough stirring after each addition. The temperature should be allowed to fall somewhat during these additions, as the melting point of the alloy gradually becomes lower. Stirring with a stick of wood improves the quality of the metal. The second alloy, which in England and France is protected by patents, is also of value as a bearing metal; it is much harder than the ordinary bronzes. It is made by melting 50 parts of German silver, then adding 40 parts of zinc, and, stirring, adding 5 parts each of antimony and of tin. The third alloy has been patented by Walther Gosmann and is manufactured by Krupp in Essen. Its composition is: 87 per cent. aluminum, 8 per cent. of copper, and 5 per cent. of tin. It is claimed that this alloy makes much metter castings than do the aluminum-zinc alloys; that it possesses great rigidity, and that it may be easily worked.

COLORING METALLIC ARTICLES BY MEANS OF LEAD SALTS.

The processes for coloring metallic articles by placing them as anode in a bath containing a salt of lead, have hitherto suffered from the disadvantage that the electrolytic deposits thus obtained have not adhered sufficiently firmly to the underlying metal. Dr. Franz Fischer, of Berlin (German Patent 199442), claims to have overcome this difficulty by first coating the object with metallic lead and then placing it, as anode, in a special bath. One method giving good results is to first electroplate the article with a thin layer of lead and then to place it as anode in a hot solution of phosphate of sodium, ammonium or potassium. According to the temperature, current density, and time of treatment, colors varying from yellow or green to brown or red may be obtained, depending upon which of the several oxids of lead are produced. The bath used in the electrolysis should contain some soluble salt of an acid whose lead salt is insoluble in the electrolyte. The color and appearance of the oxid coating thus obtained, can be further varied by subsequent mechanical or chemical treatment.

According to Mr. H. Stockmeier (Chemiker Zeitung 32, page 743) the electrolytic method of removing grease has attained great prominence in the plating industry in Germany. In this process the articles to be cleaned are made the cathodes in various alkaline solutions; the alkali thus produced on the surface of the metal dissolves or loosens the grease so that it rises to the surface of the bath. This grease must be carefully skimmed off before the article is removed from the bath.

M. Schoop has patented (French Patent 374,089) a flux for use in the autogenous soldering of aluminium; it consists of 60 parts potassium chlorid, 20 parts lithium chlorid, 12 parts common salt and 4 parts potassium pyrosulphate.

A lead water-pipe about 2,000 years old, found recently on the island of Brioni, proved on investigation to have been made of two sections of lead (99.2 per cent. pure), soldered with a lead-tin mixture containing about 75 per cent. of tin.

Shop Problems

IN THIS DEPARTMENT WE ANSWER QUESTIONS RELATING TO SHOP PRACTICE OF THE METAL INDUSTRY. ADDRESS THE METAL INDUSTRY, 61 BEEKMAN STREET, NEW YORK.

ALLOYING

Q.—We would be obliged if you would let us know the best alloy to put in aluminum for castings, that is, to make a strong and tough aluminum for machine bases.

A.—Aluminum alloys should first be run down into ingots and then remelted before pouring into castings. A good mixture is the following:

No. 1 notched bar aluminum	80
Bertha zinc	11
Yellow brass sheet	7
20% Manganese zinc	2

The thorough alloying of aluminum alloys is difficult and we would recommend that you obtain your ingot from the makers of such alloys.—J. L. J.

Q.—We wish to know the kinds and quantities of metal necessary to be mixed with aluminum to obtain the loudest ring for house-door bells.

A.—A very good formula that we are acquainted with for making small bells, and which has a clear sonorous ring consists of:

Aluminum	70
Zinc	27
Copper	3

This mixture can be poured in a small sand mold, and by dusting the surface of the mold, before casting, with powdered soapstone, a very fine satin finish can be obtained. In melting the above mixture put one-half of the charge of aluminum in the crucible, and when it is melted, gradually add the copper cut in small pieces and stir thoroughly. The copper will be absorbed by the aluminum, making the aluminum copper alloy; this adds strength to the casting; then add the rest of the aluminum, and finally the zinc, stir well, cover with charcoal and allow to come up gradually to between 1100 and 1200° F.; withdraw from the fire, skim and pour immediately. The gate and feeder for this mixture should be considerably larger than for brass.

CONDUCTING

Q:—Do you advocate the use of common salt and boracic acid in nickel solution for general job work? We have a new solution made up of double salts, which is up to the correct density, but does not give a very white deposit nor deposit rapidly. There was a considerable amount of copper in the solution when we made it up, and which covered the anodes when not in use, although we did not add anything else but the double nickel salts to the solution, it being a new solution, new anodes and new tank. We presume the copper will work out after a while.

A.—Your new nickel bath is deficient in conductivity; this is probably the cause why the nickel does not deposit rapidly or produce a white color. Add 3 or 4 ounces of common salt or sal ammoniac to each gallon of solution; this addition may increase the density too high; if so, reduce to 5½ or 6°Be. Some authorities claim the addition of boracic acid produces a softer and whiter deposit, but this depends upon the conductivity of the solution. If, after adding the common salt or sal ammoniac, your solution does not produce a sufficiently white deposit, add 1 or 2 ounces of boracic acid to each gallon. The reddish tone noticed upon the anodes when the solution is at rest is not due to copper in the bath unless placed there, but to a small content of cobalt from which nickel anodes can never entirely be freed. —C. H. P.

DEPOSITING

Q.—I wish to get the same silver deposit finish as on the sample I send you.

A.—As you are no doubt well aware, to produce as white results as noted upon sample is entirely due to the use of the proper silver paint and the proper fusing temperature, as the sample, has been accomplished by the burning-in process. Some concerns use the borate of lead formula and produce good results, but again this depends upon how much lead the glass itself contains. There are several well known concerns that use the same formula, but they guard it very secretly, and it is impossible for us to determine the composition by analysis of the deposit. The following formula is used by a well-known Newark, N. J., concern, and gives excellent results:

Silver powder, dry	1 oz.
Gold alloy flux	5 dwts.
Nitrate of bismuth	40 grams
Borax	18 grams
Powdered glass	1 dwt.

Grind in Dresden oil and fat oil of turpentine, then reduce with spirits of turpentine.—C. H. P.

FINISHING

Q.—We want to do frosted finish work on goods like candy tongs. These are made of brass and then silvered. Please advise how to finish.

A.—The finish that you refer to is known as the satin finish silver dip and is largely used upon such articles as candy tongs and cheap novelties. The operations consist of the cleansing of the articles, satin finishing in the acid satin finish dip, bright acid dipping, silvering and lacquering. No. 1.—The matt finish dip consists of dissolving 6 ounces of sheet zinc in 1 gallon of aqua fortis; the zinc must be added in small portions to avoid the solution boiling over. When the zinc is all dissolved and the acid cold, add 1 gallon of oil of vitriol and mix thoroughly; the dip is now ready for use.

No. 2—The bright acid dip consists of:

Aqua fortis 38%	1 gal.
Oil of vitriol 60%	1 gal.
Water	1 qt.
Muriatic acid	2 ozs.

The silver dip consists of the following:

Nitrate of silver	1 oz.
Caustic soda	10 ozs.
Cyanide of potassium	6 ozs.
Water	2½ gals.

The lacquer is the usual transparent dip lacquer purchased from any lacquer manufacturer. The method used is as follows: Cleansing the articles in hot potash solution to remove grease or oil, washing in clean cold water, immersing in the satin dip by the aid of earthenware dipping baskets, or when convenient supported upon copper wire, placing as many articles upon it as can readily be immersed in the various solutions. After a few minutes' immersion the articles are removed if sufficiently satined, washed in cold water, immersed immediately in the acid bright dip, again washed in cold water and then immersed in the silver dip agitating to and fro for a few seconds, drip well when removing to avoid as much loss of the solution as possible. Wash again in cold water, pass through boiling water to which a little plater's soap is added and then dry out with fine maple sawdust. The articles are then lacquered if necessary. The silver dip is maintained at a temperature of 140° F. The matt dip is also maintained warm; 100° F. will be sufficient. If the satin is too coarse, add more oil of vitriol; if too fine more aqua fortis.—C. H. P.

GILDING

Q.—Will you kindly publish in your paper a good formula for a cheap gold solution? I have some pins as per sample to gold plate.

A.—The following formula for dip gilding will produce excellent results: Dissolve in 1½ gallons of warm water 2½ lbs. caustic potash and ¾ pound bicarbonate of potash. In another gallon of warm water add 4 ozs. of cyanide of potassium and 1¼ ozs. of chloride of gold; or ½ oz. pure 24-kt. gold may be reduced to chloride with aqua regia and evaporated in the usual manner and then added as stated above. Thoroughly mix the two solutions when prepared and boil. The best receptacle for this purpose is a cast iron kettle heated by any method to produce a boiling solution. When the solution is first prepared allow to boil for some time and then add water to replace that lost by evaporation. A momentary dip will produce a good color. Articles should be previously acid dipped polished or brass plated according to the base of the metal, as only articles made from brass, copper bronze, or copper plated can be dip gilded. The solution is maintained in strength by adding chloride of gold every day or two, according to the amount of work accomplished. About two or three dwts. of cyanide should be added once a month and about 4 ozs. caustic potash every two or three months. We will state for your benefit that the sample submitted to us has not been gilded. The badge clasp is made from gildine metal acid dipped and lacquered. The firm whose name appears upon the back of the clasp manufacture all their goods of this description from this alloy, which closely approaches gold and costs little more per pound than brass.—C. H. P.

INKING

Q.—Do you know of any print or ink that is alcohol proof or how to make some that will resist alcohol?

A.—The heavy or set oils are absolutely alcohol proof. So is varnish; or resin; only essential oils and aniline dies are soluble in alcohol. The ordinary printing ink contains lamp black and a resinous oil or a set fat, therefore should be alcohol proof. The addition of turps, Venici turpentine, resin or varnish should render it more resistant. An ink could be mixed of lamp black and glue (gelatin or gum substances soluble in water only). These would resist any kind of spirituous or ethereal solvents, but would be absorbent to water or even moisture. Lithographic transfer ink we consider about as good a resistant to alcohol as could be found.—E. F. W.

LACQUERING

Q.—One of our customers has considerable trouble with yellow brass castings discoloring after lacquering. Can you help him out?

A.—This is the common trouble in this line of work and is due to the porosity of the casting which absorbs the cyanide solution during the plating operations; this is more noticeable during the humid weather of summer time; during the winter very little trouble is experienced. The only satisfactory method is to boil out the plated product in a weak solution of plater's compound free from ammonia, about 4 ounces to each gallon of boiling water for 10 or 15 minutes; then dry out and let the articles lay around for two or three days before finishing and lacquering; in this way the spotting can be avoided to a great extent. All lacquered brass goods deteriorate in lustre in a short time, producing a little darker tone. If a good heavy lacquer is used tarnishing should not be apparent unless continually handled. It is no doubt true that the perspiration from one person will affect lacquer like metals more than that of another.—C. H. P.

MOULDING

Q.—Can you give us a good quick method for making plumber's water fittings without going to the expense of a molding machine?

A.—For such work as you have, if you do not want to go to the expense of getting a molding machine, I would suggest using a ¼-inch steel plate cut to fit your flask, putting a pattern on each side of the plate. If you have compressed air, attach a small vibrator to end of plate and if at any time you should desire to use a molding machine you can do so without any change in patterns or flask. If you do not care to go to the expense of steel plates, use a wooden board dove-tailed on the ends and with strips of 3/16-inch steel, 1 inch wide, screwed on to hold flask-pin holes.

If your patterns are such as cannot be split, proceed as follows: Make a mold in the usual way with a good parting, using a flask large enough to take in the size of your flask when mold is finished. Lay ¼-inch steel strips around your mold to the size wanted for plate, close mold and pour in pattern metal made of zinc ½ and tin ½. If this metal is melted and poured with care very little shrinkage will be found in the patterns and very little work for the pattern maker, except to drill holes in plates for flask-pins. When the order is completed the plates can be melted up and the metal used again.—W. J. R.

PLATING

Q.—How can I make a gold solution for small work, and what kind of a battery is best?

A.—A good formula for a gilding solution for small work consists of the following ingredients:

Water	1	gal.
Phosphate of soda	6	ozs.
Bisulphite of soda	1	oz.
Cyanide of potassium	6	dwt.
Chloride of gold	7½	dwt.

The solution should be maintained near the boiling point by the aid of a hot water bath or Bunsen flame. The anode should be of 24 karat. As the gold is withdrawn from the solution more chloride of gold should be added, and a very small amount of cyanide. The Bunsen type of battery gives the best results. Use a 1 or 2-quart cell, according to the size of your gold bath and the amount of work to be plated at one time.—C. H. P.

Q.—Please publish a good formula for a brass solution; also for a matt dip on brass.

A.—For a brass solution use the following formula:

Water	1	Gal.
Carbonate of copper	3	ozs.
Carbonate of zinc	¾	oz.
Bisulphite of soda	1½	ozs.
Carbonate of soda	2	ozs.
Cyanide of potassium	6	ozs.
20% Ammonia water	½	oz.

To prepare add the cyanide in half of the water, preferably cold, the copper and zinc salts and the soda salt in the remaining part of the water, then thoroughly mix, work the solution for a short time, then add the ammonia. The solution should be worked at a temperature of not more than 100 degs. For a brightener when the deposit is dull add a few drops of arsenate of soda. Arsenate of soda is prepared as follows: Dissolve in 1 pint of boiling water ¼ lb. of caustic soda 98 per cent. then add ½ lb. white arsenic, keep this as a stock solution, adding as stated only a few drops when the deposit is dull or earthy.

A matt dip is prepared as follows: Dissolve 6 ozs. of sheet zinc in 1 gallon of 38 per cent. aqua fortis; when dissolved allow to cool, then add one gallon of oil of vitriol, mix thoroughly and allow to stand for several hours. Afterward heat up the dip by the aid of hot water surrounding the outside of the acid pot; when considerably warm immerse your cleansed articles in the dip for a minute or so, keep the solution agitated by stirring frequently with a wooden paddle. When the articles have a dark earthy appearance remove, wash in cold water and then pass rapidly through the regular bright acid dip, then dry out in the regular manner.

First, it is well to remember that when the matt is too fine or smooth, add a little more aqua fortis.

Second, when too rough or granular, add a little more oil of vitriol.

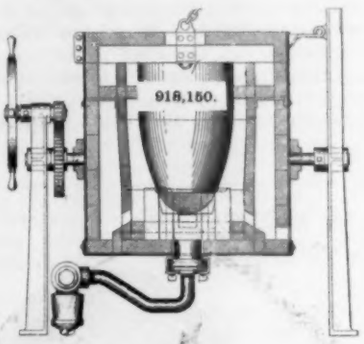
Third, when a new dip refuses to matt, add a very little water, not more than 1 oz. at each time.

Fourth, before immersing articles stir the dip thoroughly each time.—C. H. P.

PATENTS

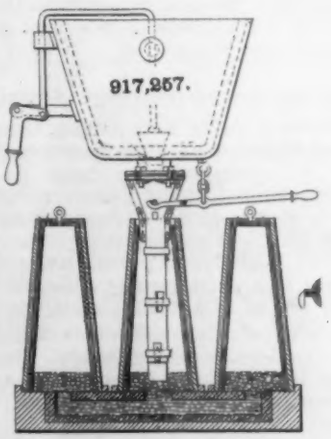
REVIEW OF CURRENT PATENTS OF INTEREST TO THE READERS OF THE METAL INDUSTRY.

918,150. April 13, 1909. MELTING FURNACE. James E. Hewitt, Newark, N. J., assignor of one-fourth to Christian Franz, Newark, N. J. This furnace as shown in cut is constructed in such a manner as to allow of introducing the fuel directly beneath



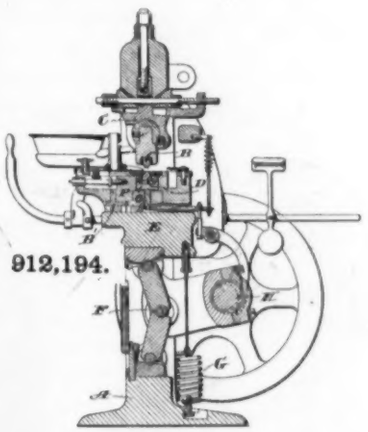
the crucible and thus eliminate the feature of admitting the fuel at the side as is common with other furnaces of this type. A suitable insulation between the inner combustion chamber and the shell of the furnace is employed. The whole amount of heat furnished by the fuel is utilized for melting, and further the parts are arranged mechanically so that the furnace can be economically made, easily managed and operated at a minimum expense.

917,257. April 6, 1909. PROCESS OF AND APPARATUS FOR CASTING METAL. Thomas Critchlow, Jersey City, N. J. An invention of a process and an apparatus for casting metal which will exclude the air from the molten metal, thereby producing a casting free from air holes, bubbles and other injurious effects of the air, which will be simple in construction and operation, but will have a high degree of efficiency. As shown in cut the



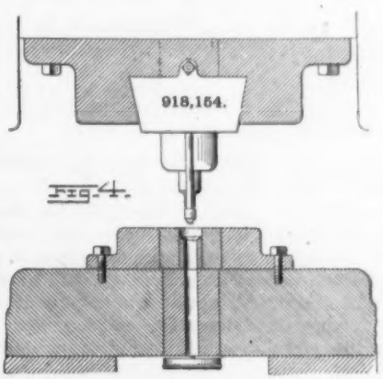
nozzle of the ladle is so arranged that the molten metal in it is discharged into the mold, first at a point near the bottom of the mold, and then at a point near the surface of the metal already within the mold, this point being below the surface, in this manner excluding the air from practically the entire stream of molten metal as it passes from the ladle to the mold. The ladle is so supported that it can be gradually elevated, in order to properly introduce the metal.

912,194. February 9, 1909. COINING PRESS. Oberlin Smith, Bridgeton, N. J. An improved coining press of simplified construction, designed with a view of increasing the efficiency, and also facilitating access to parts for cleaning, and for change when coins of different sizes are to be made. This press is an improvement on the one covered by United States patent 574,227 December 29, 1896, granted to the same inventor. It consists of (see cut) a frame, A, comprising a base and two vertical posts connected at their tops, an upper coining die, B, mounted in a hinged or swinging holder or chuck, C, a lower die,



D, a vertically movable support or ram, E, carrying the lower die, a toggle, F, for raising the ram, interposed between the ram and the frame base, a spring, G, for lowering the ram, and a crank driving shaft, H.

918,154. April 13, 1909. METAL TUBE MACHINE. Leslie E. Hooker, Pawtucket, R. I. An improvement in the methods of manufacturing of tubes as covered by the patent 822,285 issued June 5, 1906, to G. W. Lee. It has been found by experiment that much stronger tubes can be made by starting the extrusion with a cup-shaped blank formed by folding up the edges of a disk around a punch or mandrel than when starting with a disk. The improvements consist in the construction of the dies, in which the blanks are placed to be extruded into tubes, in the provision of mechanism for detaching and removing the flange



scrap from the tubes and dies; in the construction of the forming and extruding punch, and in the combination and arrangement of the parts going to make up a practical and efficient machine for carrying out the process, as is shown in cut.

Associations and Societies

REPORTS OF THE PROCEEDINGS OF THE METAL TRADES ORGANIZATIONS.

NATIONAL ELECTROPLATERS' ASSOCIATION OF UNITED STATES AND CANADA.

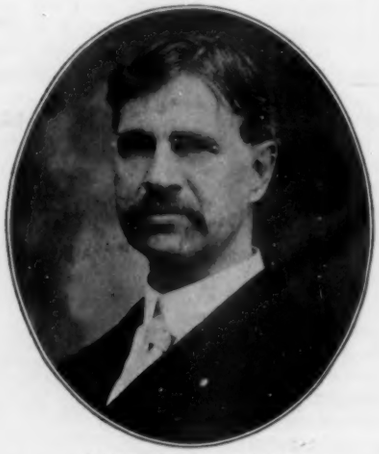
President, Chas. H. Proctor, Arlington, N. J.; Treasurer, Nathan S. Emery, New York, N. Y.; Secretary, Benj. W. Gilchrist, Woodhaven, N. Y. All correspondence should be addressed to the Secretary, Benj. W. Gilchrist, Box. 26, Woodhaven, N. Y. The objects of the association are to promote the dissemination of knowledge concerning the art of electrodeposition of metals in all its branches. Meets the first Friday of each month, 8 p. m., at the Hotel Chelsea, 222 West 23d St., New York City.

A uniform application blank was also adopted and will be furnished on request by the secretary.

The second regular meeting was held at the Hotel Chelsea, Friday evening, May 7. There were twenty-eight members present and it was a session full of enthusiasm. A committee consisting of President C. H. Proctor, Treasurer N. S. Emery and L. J. Krom was appointed to investigate the matter of incorporation. A librarian was appointed in the person of S. B. Hogaboom, whose duty it will be to compile and record all matter pertaining to the art of deposition of metals. This promises to be a very valuable adjunct of the association. Six new members were received.

OFFICERS OF THE NATIONAL ELECTROPLATERS' ASSOCIATION.

CHAS. H. PROCTOR,
President.
Supervisor, F. H. Lovell Company,
Arlington, N. J.



BENJ. W. GILCHRIST,
Secretary.
Foreman Plater, Lalance & Grosjean Mfg. Co., Woodhaven, N. Y.

NATHAN S. EMERY,
Treasurer.
Foreman Plater, Victor Typewriter Company, New York, N. Y.

At the first regular meeting of this association, held April 10, 1909, at the Hotel Chelsea, the following vice-presidents and committees were appointed:

John J. Fannon, of Brooklyn, for New York.

Hugh Baxter, of Orange, for New Jersey.

J. W. Slattery, of Norwich, for Connecticut.

H. E. Willmore, of Washington, Ill., for Illinois, Michigan, Ohio and Indiana.

ADVISORY BOARD.—Wm. Schneider, chairman; Joseph Dimes, H. H. Smith, Royal F. Clark and R. H. Sliter.

PRINTING COMMITTEE.—Geo. B. Hogaboom, chairman; Justus A. Stremel and H. C. Barnard.

The members present voted to leave the charter open for six months or until the advisory board saw fit to close it.

Section 4 of the By-Laws was adopted to read as follows: "The dues of an active member will be $5, and of an associate member $3 per annum. All applications for active membership must be accompanied by a fee of $2, and a balance of $3 paid upon the election of the applicant, said $5 to be full payment of all dues for the fiscal year. Associate members to pay $1 at time of filing the application and $2 upon election." Said payments to be in full for dues of the fiscal year, provided the said election be held previous to the last two months of the fiscal year, otherwise the payments shall apply on the following year's dues.

AMERICAN BRASS FOUNDERS' ASSOCIATION.

President, Charles J. Caley, New Britain, Conn.; Treasurer, John H. Sheeler, Philadelphia, Pa.; Secretary, W. M. Corse, Detroit, Mich. All correspondence should be addressed to the Secretary, W. M. Corse, 123 Palmer Avenue, East, Detroit, Mich. The objects of the Association are for the educational welfare of the metal industry. Annual convention with the American Foundrymen's Association the latter part of May each year in a succession of cities, as invited. The 1909 Convention will be held in Cincinnati, Ohio, May 18-20.

Secretary Corse reports the applications of three new members, bringing the total membership up to 189. The secretary also reports progress in the matter of preparing a schedule for the proposed standard methods for analysis of brass and similar alloys.

AMERICAN FOUNDRY FOREMAN'S ASSOCIATION.

President, W. S. McQuillan, Warren, Pa.; Secretary-Treasurer, C. E. Hoyt, Chicago, Ill. All correspondence should be addressed to the Secretary, C. E. Hoyt, Lewis Institute, Chicago, Ill. The objects of the Association are for the advancement of the interests of all foundry and pattern shop foremen and their employees. The Association has a branch in all of the manufacturing cities, and full information can be obtained by corresponding with the General Secretary, C. E. Hoyt.

ITEMS OF INTEREST TO THE INDIVIDUAL.

Charles Timmerman has accepted a position as foundry foreman with the Troy Carriage Sunshade Company, of Troy, Ohio.

R. F. Lang, the well-known importer of alloys and metals, with offices at 31 Broadway, New York, left for Europe on May 8 on his annual trip in the interests of the business.

George Leiman, of Leiman Brothers, manufacturers of silversmiths' and jewelers' equipment, 62 John street, New York, has returned from Florida, where he spent three months fishing, cruising in his yacht and visiting friends and relatives.

T. V. Wright has resigned his position as secretary at the Illinois Pure Aluminum Co., of Lemont, Ill. He will be employed at Matoon, Ill. E. J. Fitzgerald, the assistant general manager, has been elected secretary to succeed Mr. Wright.

C. A. Tupper, publicity manager of the Allis-Chalmers Company, Milwaukee, Wis., has addressed a letter to his friends of the trade and technical press requesting that representatives of the various trade journals make appointments with him in advance, that he may always have the time to see them.

Leon Ward, general manager of the Buckeye Aluminum Company, Doylestown, Ohio, has recently visited several Eastern cities, including Boston, Hartford, New York, and Philadelphia. Mr. Ward is a pioneer aluminum manufacturer, having been engaged in the manufacture of aluminum goods for sixteen years.

R. M. Merritt has resigned as New England manager of the Hoyt Electrical Instrument Works, of Penacook, N. H., to become associated with the Wetmore-Savage Co., Boston. E. W. Carter will look after the New England interests of the Hoyt Electrical Instrument Works. The change took place May 1.

William F. Almy, who was formerly with Almy, Stone & Co., is now with the Almy-Cory Company, 79 Sabin street, Providence, R. I., he being the president and Alexander H. Cory, Jr., secretary and treasurer. The name of Almy, Stone & Co., has been changed to the Hanley-Stone Company.

Thomas Jordan, who for many years was in charge of the plating room of Edward Miller & Co., Meriden, Conn., has taken a position as superintendent of the polishing, plating and finishing departments of August Goertz & Co., Inc., Newark, N. J., manufacturers of all kinds of fancy metal goods.

Since the first of April Mr. A. J. McCormack has been the treasurer and general manager of the Taunton Crucible Company, Taunton, Mass., in place of Horace Richardson, resigned. Mr. McCormack was for fifteen years head salesman of the Fowler Nail Company, Seymour, Conn., and is a thorough business man.

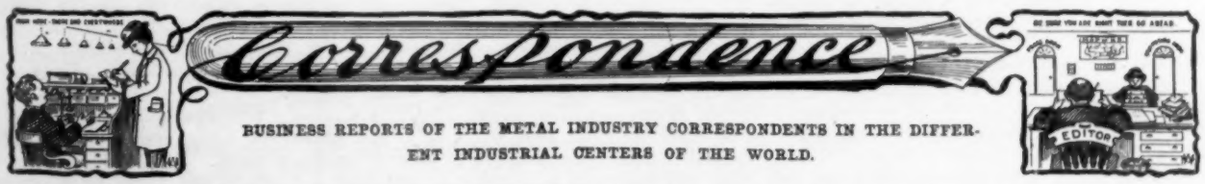
The incorporation and establishment of the Bridgeport Metal Goods Company, Bridgeport, Conn., noted in the trade news of this month, has made some vacancies in the Bridgeport Brass Company, where the incorporators of the Metal Goods Company held various positions. Mr. Lyhne's position has been given to his former assistant, Arthur Moore, and Mr. Phillips' work has been divided up among several foremen.

W. H. Legate, who was running a plating plant of his own for many years at Hartford, Conn., has recently been appointed the Eastern salesman for the Zucker & Levett & Loeb Company, of New York City, with headquarters at 40 Westland street, Hartford. Mr. Legate's thorough knowledge of the plating business and his enthusiasm and attachment to the plating industry makes him an active salesman.

The brass trades will regret to learn that Charles J. Caley, general manager of the Russell & Erwin Manufacturing Company, New Britain, Conn., has not been able to attend to business for a month past, having gone to Atlantic City to recuperate and from there will go to the Maine woods for a further rest. Mr. Caley will be unable to attend the Cincinnati Convention, and his place as president of the American Brass Founders' Association will be taken by Vice-President William R. Webster.

DEATHS

George S. Northrup, comptroller of the Magnus Metal Company, died April 27, 1909, at his home in the Hotel St. George, Brooklyn, N. Y. He was in his fifty-eighth year. He is survived by his wife.



BUSINESS REPORTS OF THE METAL INDUSTRY CORRESPONDENTS IN THE DIFFERENT INDUSTRIAL CENTERS OF THE WORLD.

WATERBURY, CONN.

MAY 3, 1909.

Steadily and now with increasing speed and force the tide is turning this way, and the brass makers of the Naugatuck Valley, as well as the various associated interests, are feeling its effect more each week. Naugatuck Valley is coming back to its own, and the increase of hours and employees here and there, with the absence of labor troubles is taken as certain promise of general advancement from now until the middle of summer. Then the slowing down will be only for the sake of summer vacations, and not until after a good start has been made of the supplies for winter's and next spring's orders.

Several months ago the fact was published that the pin manufacturers were among the first to get over the slump following the financial crisis of 1907. These factories have just found it necessary to increase the operating time nine hours a week in many departments, and the number of employees has increased steadily during the past ten months. The American Pin Company is running until 10 p. m., four hours overtime, daily, to turn out orders in some of its best lines. From Winsted to Derby such marks of improvement as this are noted from time to time, and while Waterbury is the more fortunate, yet in this respect the increase, on the whole, is proportionate.

Freight shipments in and out of Waterbury have increased faster in the past three months, particularly in the past six weeks, than in any other city on the New Haven Railroad system. Seventy-five per cent. of this increase has been in goods consigned to or shipped by the metal manufacturers. This, too, despite the delay, which all admit is caused by dilatory tactics

as to tariff legislation. At the same time, there are many here who would be content to let the present tariff rates stand, while good arguments are advanced for changes which would assist the American brass industries in competition with German manufacturers. Quality has ranked high in most American brass products, and the art of making good looking novelties, such as Germany ships in here under American prices, seems to have lacked some attention in the aim to produce the kind that wears well.

In speaking of present conditions, a Waterbury man close to the metal industries, said, last week:

"We felt things going back, along a wave, so to speak, and now they are coming back in the same way. We first lost ground with the New York trade, Boston holding out well against the pessimistic conditions. Now New York orders are coming in faster each week, and up Boston way our men find it slow. Vermont, New Hampshire and Massachusetts are almost dead, and bills are six months old. New York lost first, and is the first to get it back. Through the South and Middle West it is still hard pulling, but we find a gradual improvement. Prospects are good for busy days 'way into the summer."

One of the noticeable things about the work now being turned out is that it is largely what is termed "cheap stuff." The lower priced watches and jewelry novelties are in demand, and the New England and Waterbury watch factories are busier than at any time in a year on these goods.

In the Scovill Manufacturing Company, the Plume & Atwood Manufacturing Company, the American Brass Company and the Chase factories, and many of the smaller plants the recent revival continues with good prospects.

Recently a rumor spread here that Harry S. Chase has bought out the Noera Manufacturing Company, and intends to make it an adjunct of the Waterbury Manufacturing Company. Both President F. P. Noera and Mr. Chase explained that there was no foundation to the story beyond the fact that Mr. Chase had some stock of the Noera company. The latter concern makes brass novelties and automobile fittings.

About three weeks ago, it is understood, the newly organized Crescent Manufacturing Company, incorporated by the Fitzsimons family and others interested in the Novelty Manufacturing Company, received a large contract for bath room fixtures from a New York wholesale house.

There is considerable interest here in the announcement from Bridgeport of a $50,000 addition to the large plant of the Bridgeport Brass Company. On account of tidewater freight facilities the Bridgeport concern enjoys a few advantages over the local competitors, but its existence has caused but little worry here as yet. The new brass corporations at Hastings-on-the-Hudson, independent of the American Brass Company, and equipped with plants manned by many former employees of the latter, are looked upon as more formidable rivals.

Collections are fair, and there is a slight improvement in foreign as well as American orders.—F. B. F.

BRIDGEPORT, CONN.

April 30, 1909.

Bridgeport as an industrial center is one of the foremost towns in the East, and leads all other cities of its size in the variety and extent of its manufactures in metals of all forms. Consequently the manufacturing business conditions are at once reflected in Bridgeport's industries. It can be fairly estimated that most of our metal industries are back on full time and full handed.

The Bridgeport Brass Company are running full time but slightly short handed. The president, J. F. Kingsbury, reports that large orders have been received and that soon more help would be put to work.

The Fairfield Aluminum Foundry Corporation have just completed a large addition which doubles the working space of the foundry. They have installed a new furnace and have in the last month engaged several more molders. The chief product of this plant is castings for automobile engines. They make aluminum castings for the Bridgeport Motor Company. During all of the hard times of last year the entire working force was at work every day.. Since January 1 of this year the number of orders has nearly doubled.

Several years ago the Crane Company of Chicago took over the Eaton, Cole & Burnham Company, of Bridgeport. For years this old name has clung to the works. At the last session of the Superior Court in Fairfield county, the name was changed to the Crane Valve Co. The object of the present owners was to have the works identified with the Chicago concern. They manufacture iron, brass and copper valves.

The Bridgeport Motor Vehicle Company are just about to enter their four story brick building on State street in this city. Hitherto they have made nothing but wooden bodies for automobiles. The plan is under consideration to manufacture aluminum bodies. President Harry D. Miller declines as yet to make a statement on the subject.

The Union Metallic Cartridge Company have ordered plans made for a ten story brick shot tower. Following the erection of this tower they will cast their own shot. This concern is perhaps one of the largest industries in the city, and, with perhaps three exceptions, in the State. They turn out daily thousands of boxes of shells loaded with powder and shot; also all sizes of bullets, which are made to fit Remington rifles and guns. There has been a great deal of talk about the Remington Arms Company moving to Bridgeport, but as yet the local Board of Trade have been unable to land them.

The plating and silver shops are on the jump at Bridgeport, now running on full time and turning out fall orders very rapidly. The Burns Silver Company and the Handy and Harman factories are both doing rush orders. Last week Handy & Harman received 120 bars of refined silver through the Adams Express Company.

Friday evening, April 16, the Bridgeport Board of Trade banquetted at the Stratfield Hotel, having Baron Takahira, of Japan, as the guest of honor. Hon. Stiles Judson, in his speech, "The Board of Trade," told how this body was all important to Bridgeport, and much more so to the working man. He laid stress upon the fact that Bridgeport was a manufacturing city, and used every kind of metal in the world, and also manufactured almost every kind of article in common use in this country.—L. E. B.

[Particulars of two other new Bridgeport enterprises will be found on the trade news pages, following.—Ed.]

PROVIDENCE, R. I.

May 4, 1909.

The condition of the manufacturing jewelry business in this section continues to show the same uncertainty as has characterized it for several weeks. Some factories report that their plants are doing a larger business now than during the Christmas trade. Others report a state of depression. The activity seems to be confined largely to the cheaper grades of manufacture. All the manufacturers are sanguine that business will brighten up rapidly in the near future.

W. J. Feeley, of Providence, of the W. J. Feeley Company, has been in Washington seeking, with the assistance of representatives of the Gorham and other silver manufacturing companies an amendment of the tariff law that will place a duty upon certain silver articles that are used extensively in the Catholic churches of the country. It is the desire that chalices and other articles of silver used in the 7,000 American Catholic churches shall be protected by a duty as are the products of the silver workers in other lines.

The Metal Products Company has awarded the contract for its new building at the corner of Eddy and Blundell streets. The building will front on Eddy street. It will be in the shape of a complete square with a court, in the center of which will be a storage house. The structure will be of mill construction and will cost $52,000.

The employees in the bronze department of the Gorham Manufacturing Company have been working 14 hours a day completing a statute of Abraham Lincoln, which is to be dedicated at the Lincoln Farm, Hodgensville, Kentucky, May 30. The statue is of heroic size and portrays Lincoln seated in an arm chair. It will be ready for shipment May 15.

The Atlas Jewelry Company has recently been incorporated in Boston with a capital of $50,000. It intends to locate in Woonsocket, R. I. George E. Menard, formerly of the manufacturing jewelry firm of Menard, Charnette & Menard, of Attleboro, is one of the incorporators.

The Improved Seamless Wire Company has received a permit to build a brick manufacturing plant on Eddy street. The build-

ing will be two stories in height and have a frontage of 99 feet and 48 feet in depth.

Huger Elliott, director of the Rhode Island School of Design, in a recent report to the directors, recommended the raising of funds for an annual travel scholarship in jewelry design, $500 for six months' travel and study abroad.

Harry Cutler and George H. Holmes, two of the best-known manufacturing jewelers in New England, have just completed their first terms of service as members of the House of Representatives in the General Assembly. Mr. Cutler, who is president of the New England Manufacturing Jewelers and Silversmiths' Association, has made a record for himself by introducing and securing the passage of a number of bills for the protection of the poorer classes. Mr. Holmes, who is treasurer of the George H. Holmes Company, has been especially prominent in the defeat of measures opposed to the welfare of the city of Providence.

The Hanlon & Thornton Company, of North Attleboro, has filed a petition for a building permit with the City Council of Woonsocket, stating that it will erect a jewelry factory in that city and employ 200 hands. Exemption from taxation for a period of 10 years has been granted by the City Council.

Albert J. Thornley, John M. Mackenzie and Joseph J. Walton have been incorporated with a capital stock of $25,000 as "The Mackenzie-Walton Company." The corporation will engage in the manufacture and sale and will otherwise deal in tubing made of copper, brass or any other material.—E. S. U.

BUFFALO, N. Y.

MAY 3, 1909.

There was a steady improvement noticed in the metal industries here last month, and dealers are growing optimistic over the outlook for the summer and fall. They say the usual early lull of the year is over, and that business has been held up so long that there is bound to be a change for the better before long. An encouraging sign was the additional help put on the latter part of the month.

A large number of the supply shops were located near the waterfront and depend to some extent on the lake trade each summer. A strike of 20,000 engineers, firemen and seamen is not very cheering to them, and besides the outlook for freights is such that many boats will not turn a wheel until very late in the year, if at all. There is consequently less call for engine and boiler trimmings.

A strike of 200 journeymen plumbers, which has also been in effect since April 1, has affected the supply end of the trade. There is no building boom, and the master plumbers are holding off by doing their own work.

Most of the brass foundries report a better feeling in the trade. Fries & Co., which has recently put in new equipment, report an increase in business for every month this year over the corresponding period in 1908. April, with them, showed a bigger increase than any month so far this year.

There is much automobile supply work in tops and fixings let out here by the big manufacturers. This, of course, goes to the brass people.

The jobbing plating business in Buffalo has seen better days. There was a time not many years ago when the city was dotted with small jobbing plants, where the manufacturers sent their plating work, but now this is all changed. The decline of the bicycle industry hit the jobber, but the big automobile concerns, jewelry and novelty houses now have their own plating rooms.

A. G. Strauss, the Washington street plater, has been doing business here 25 years, and has seen this revolution referred to. He does nickel, bronze, gold and silver plating, and says business is only fair.

King & Eisle and Heintz Brothers, two of the largest manufacturing jewelers here, had a steady trade last month. They enjoyed a good holiday trade.

The Star Plating Works has opened new quarters at 98 Broadway, and are busy.

Work on the new plant of the Buffalo Copper and Brass Rolling Mill Company will begin soon.

The city is negotiating with a big brass foundry down the State to remove its factory here.—AMERICA.

CLEVELAND, OHIO

MAY 5, 1909.

Business conditions here are much better than a month ago, and factories are running on better time for the most part, gradually increasing the number of employees. The plumbing goods business is picking up with the reopening of the building season. Cleveland ranks as leader in the production of brass and other metal plumbing goods. Several concerns are preparing for a rush season, as they believe the depression has passed. There has been a general building boom here for the past month, which has extended through many parts of Ohio.

The jewelry business is also framing into better shape and the manufacturers are hopeful of a busy season. They expect their main rush to come during the summer, as the retailers have been running close, and must stock up for the Christmas trade.

The Webb C. Ball Company, manufacturers of jewelry and fine railroad watches, has ordered its architects to proceed with the remodeling of the Kingmore building, on Euclid avenue, in the heart of the new shopping district. The plan of raising the building from three to seven stories may yet be proceeded with, but in the meantime a three story addition, 40 x 80 feet in size, will be built in the rear. The company will move to its new location as soon as it is finished, using the two east stores, to be remodeled into one, for their retail trade, and the new addition for factory purposes. The addition and alterations will cost about $40,000. The concern hopes to get located by early fall, in time for the heavy fall and winter trade which it always enjoys.

That Cleveland has become an important center for the manufacture and distribution of jewelry and metal goods will be impressed upon visitors at the forthcoming Industrial Exposition to be held in this city in June. Extensive preparations are being made, and the great temporary building is being erected. Among the concerns which will have exhibits will be the Auto Plating and Manufacturing Company; the H. & H. Art Metal and Manufacturing Company; the Watchman's Time Detector Company; the Webb C. Ball Watch Company; the Scribner & Loehr Company; the J. C. Ulmer Company; The Gas Fixture and Brass Company; The Avery Stamping Company; The Cleveland Galvanizing Company; The Cleveland Stamping and Tool Works; The Ferry Cap and Set Screw Works; the Kirk-Latty Manufacturing Company; the Beeman Lock Company; The C. O. Bartlett & Snow Company; The F. L. Raymond and H. N. White companies, makers of musical instruments; The Natural Gas Regulator Company; The Glauber Brass Company; The Acme Brass Company; the Allyne Brass Company; The Cleveland Faucet Company; The Bischop & Babcock Company; The Cleveland Flushmeter Company, and various other concerns making brass, copper and other metal goods. It is expected that there will be 350 exhibitors in all, and that the exposition will be one of the greatest industrial shows ever held in America. The record to date is seventy-five firms, exhibiting at Buffalo. Already 325 have signed for space in the Cleveland show.

A Cleveland man was honored at the eleventh annual convention of the National Metal Trades Association in New York on April 15, when H. P. Eells of Cleveland was chosen as president of the organization. Mr. Eells is one of Cleveland's best known citizens.

The Cleveland Manufacturers' Club has chosen two men interested in the brass business in electing its board of control. Among the eight prominent manufacturers chosen were M. F. Barrett of the Cleveland Bronze and Brass Company, and C. H. Foster, of the Gabriel Auto Horn Manufacturing Company.

DETROIT, MICH.

MAY 3, 1909.

While Detroit is a large brass manufacturing center, conditions are not very encouraging here at the present time. The Art Brass and Wire Works officials, in discussing conditions, attribute the quiet times to the fact that while many large business establishments are in progress of construction, there are few far enough along to bring forth a great demand for this kind of material. They declare, however, that later in the season and this fall, the brass business will see a decided change for the better.

Detroit jewelers, during the past several months, have been

making a desperate effort to capture a big line of trade that has heretofore been enjoyed by Eastern manufacturing jewelers. They are aiming their efforts particularly at such cities as New York, Boston and Philadelphia. Heretofore these Eastern headquarters for everything in the line of high class articles, seems to have been monopolized by a few houses which circulated their traveling men through the West and captured all the good things. It has taken Detroit jewelers long to awaken to this fact, and now they realize that division of the trade that has been escaping them is no more than fair. After discussing the situation for a long time, several of the large manufacturing houses here decided to make a break on scarf pins, and to-day are producing large quantities of pins and booming their trade through the Northwest and Southern States.

Traub Bros., one of the largest manufacturing concerns of the kind in the city, together with others, have penetrated into their Eastern competitors' camp with an unusually large number of traveling salesmen, who are being assisted by a liberal amount of advertising. They have met their competitors face to face, and are reaping the harvest.

The Detroit Jewelers' Association is one of the most vigorous institutions of the kind in the United States. The officers have planned many successful ways of extending the wholesale and retail trade throughout this section of the country. The members believe that unity is a source of strength. Carrying out this idea, a scheme is on foot for the erection in Detroit of an enormous building, fashioned something after an arcade, where stores and shops will be rented out to the jewelers of the city. The idea is to bunch the trade and at the same time unite the dealers into a sort of mutual aid society. In this way it is believed that the jewelry business will be materially advanced. This proposed structure, no doubt, will be a model of its kind. Jewelers here are enthusiastic in the prospects of such a structure, and plan to aid in every way to make it one of the most successful ventures of the kind in the country.

Both manufacturing and wholesale jewelers throughout the city report the general trade averaging well with that of previous years. Manufacturing jewelers here are particularly favorable to "composition" work. The material used has every appearance of gold, and when the plating is worn this "composition" exposed, so closely resembles pure gold that it is almost impossible for the layman to discover the difference. It is cheap, of course, and is in demand by a large trade throughout the Northwest.

SAN FRANCISCO, CAL.

MAY 1, 1909.

San Francisco manufacturers and business men are moving back to their old locations, the new buildings now being made ready for their return after the disastrous fire of three years ago. The jewelers' building at Bush and Grant avenue will soon be occupied from basement to the top story with manufacturing jewelers. The J. O. Bellis silver factory has moved to Post and Powell streets and are quite busy. The firm of Rothschild & Hadenfeld have taken up the manufacture of sterling silver ware and have many orders on their books. Their factory is located at 38th street and San Pablo avenue, Oakland. The old silversmith firm of Shreve & Co. have returned to the Schreve Building, Post and Grant streets.

The pictures of the new buildings sent to THE METAL INDUSTRY office indicate that San Francisco is being rebuilt in a substantial fashion.

BIRMINGHAM, ENGLAND

APRIL 26, 1909.

Mr. S. Sanders, presiding at the recent annual meeting of Charles Clifford & Son, of Birmingham, said, referring to the foreign competition with the firm's metal products, they were handicapped all around outside their own country. Manufacturers in Germany, America, and other centers of industry were able to send their work over to this country free, but if we wanted to send into theirs were faced with a wall of protection which prevented our having anything to do with their trade, and displacing their operatives as they were allowed to displace ours. There was no country at the present time, bad as trade was, that was in so parlous a condition in regard to unemployment as we were. With regard to the company's operations, he was glad to say they had enjoyed a much more steady business, owing to fewer and smaller fluctuations in the price of copper, compared with those which arose in 1907 from the iniquitous gambling which emanated from some of the large financial people in the United States. The price of copper was forced up to £120 per ton, from which, in process of time, it came tumbling down until it got into the fifties. During the last year the fluctuations had not been more than a few pounds.

A rather gloomy view of trade prospects was expressed at the meeting of Muntz's Metal Co., Ltd., held in Birmingham on March 17. The firm have made a net profit of £11,625 and paid a 5 per cent. dividend, but the chairman, Mr. H. G. Harris, said trade was worse than ever before, copper was in a most lively state up and down, and nobody knew quite what to do. Mr. A. H. Wiggin declared there was no prospect of such a good year as they had had, and they were also threatened with a dumping from America. He had seen and heard quotations for American tubes from a new source, but he hoped steps might be taken by the next Government to stop that sort of thing. This remark elicited from the chairman, amid laughter, the protest, "No politics," but Mr. Wiggin retorted: "It's not politics, but economics."

The Birmingham jewelry trade is going from bad to worse. Travelers returning from the first journeys of the year have scant order sheets. Short time is being worked at nearly all factories, and manufacturing silversmiths are scarcely better off. A sign of slight improvement is the increase in the Board of Trade returns relative to exports of jewelry and plate during February. The amount shipped that month was £40,939, as compared with £34,782 in the same month of last year and £42,610 in February, 1907.

A curious development is reported by a Birmingham jeweler who states there has been a small boom in wedding rings for men consisting of plain bands of gold, but heavier and more substantial than those worn by the other sex. A local newspaper furnishes the following expanation, which I give for what it is worth:

"In America it is imperative that men shall show their servitude by wearing a ring, and the daughters of Jonathan consider that Englishmen are not 'playing the game at all' in failing to follow their example. Of course, years ago men never thought of wearing any outward and visible sign of matrimony, but latterly, and more especially since about the year 1906, wedding rings for men have become extremely popular. And why not?'"

The cutting of the Cullinan diamond, presented to the King by the Transvaal Government as a birthday present last year, has been accomplished. This unique commission was undertaken by Mr. Asscher, of Amsterdam, and was performed under extraordinary conditions of security and secrecy. It was thought wise not to trust to the saw process, and the cutting was done on the ancient plan of knife and hammer. At the second blow the stone parted, one half weighing 1,977½ carats and the other 1,040½ carats. As the total weight of the stone uncut was 3,025¾ carats, the splintering was relatively insignificant For the halving of each of the two portions a dividing knife with two handles was employed. This experiment which had never been tried before was entirely successful. Further divisions of the stone took place and the grinding and polishing was performed in Amsterdam. The two principal stones resulting from the cutting have respectively 74 and 66 facets, in comparison with the customary 58. In this way the two gems, the largest that exist, exhibit the most astonishing brilliancy, whereas most big gems are dull and deficient in fire.

No trade probably is more interested than the brass trade in the recent establishment of the Institute of Metals, of which ample details have already been published. Generally speaking, this organization is welcomed. But a number of authorities are pessimistic as to its future, the fear being that manufacturers will absolutely decline to disclose any technical secrets which may be of value to others. It is recognized, however, by the better informed that these secrets every year become fewer, and many manufacturers see great possibilities of service, merely in the information available through the researches of the various college and technical school experts. The general belief is that the institute has a long and prosperous life ahead of it.

TRADE NEWS

TRADE NEWS OF INTEREST DESIRED FROM ALL OF OUR READERS. ADDRESS THE METAL INDUSTRY, 61 BEEKMAN STREET, NEW YORK.

As mentioned in a former issue of THE METAL INDUSTRY, The Bridgeport Brass Company, Bridgeport, Conn., have plans for extensive additions, but no contracts have been placed and no details mentioned.

The Philip Lipschitz Company, of Dallas, Tex., wholesale dealers in metals, etc., are going to put up a white metal plant and would like full particulars regarding the erection and equipment of such a plant.

HARTMAN ALUMINUM SOLDER CO., Manhattan. To manufacture and deal in aluminum solder and other metals and alloys. Capital, $30,000. Incorporators: G. Hartman, Adolph Frank and W. A. Evans, all of New York.

Metal polishers', buffers', platers' and brass and silver workers' unions of Boston have already begun extensive preparations for the international convention of their organizations, which is scheduled to be held there next August.

The Elmira Machine Works, of Glover, Pa., are going to install a copper plating and oxidizing plant. They expect to use a soda or alkaline solution and would like full particulars regarding the working of such a solution.

In melting zinc a run of 175 heats with one crucible is the record reported by H. M. Shimer & Co., Philadelphia, Pa., in using a Steele-Harvey furnace, manufactured by the Monarch Engineering & Manufacturing Company, Baltimore, Md.

Selling Magazine of New York, a paper published in the interest of trade journals, has brought out the paper known as Profitable Advertising, and beginning with the June number will merge it with Selling Magazine under the title of Advertising-Selling.

The new firm mentioned in our April number that was being formed for manufacturing, importing and exporting platers' and polishers' supplies is the Levett Manufacturing Company, of Matawan, N. J. They are now ready for business.

The Waterbury Crucible Company, Waterbury, Conn., reports such an improvement in business that they are again thinking of putting up an addition to their present plant which is located in the heart of the business district of Waterbury.

Rushmore Dynamo Works at Plainfield, N. J., manufacturers of automobile lamps and searchlights, have installed two labor-molding machines and a Rockwell tilting crucible furnace. They now are pouring 1,200 pounds of brass and bronze per day, and report good business conditions.

R. F. Goyne has sold the American patent of the M. R. V. furnace to J B. Wise, of Watertown, N. Y. Mr. Wise has a large brass foundry. The M. R. V. furnace was described in the March number of THE METAL INDUSTRY, and is also shown in the advertising pages of this number.

Geo. G. Prentice & Co., New Haven, Conn., report that they have put in over $30,000 worth of new machinery during the past year to keep pace with the orders they are having for their automatic turret lathe. At present their main business is with automobile shops.

The Millett Brass Company, of Springfield, Mass., report that they are working 24 hours a day with two shifts of men in manufacturing a general line of brass castings. The Millett Company do a large part of the foundry work for the Knox Automobile Company, of Springfield, Mass.

The H. Smith Machine Company, of 51 Godwin street, Paterson, N. J., are thinking of starting a small brass foundry and plating plant. They would like to hear from supply houses familiar with the plaster of paris molding for brass castings, also from firms who can supply them with a glass grinding machine.

M. W. Shuman, 2434 Durant street, Berkeley, Cal., reports that he has some attractive inducements to offer to manufacturing concerns and wholesale houses, relating to establishing branch offices and store rooms in San Francisco. He has offices for rent in the Sheldon Building, the newest, most elegant and strongest built earthquake and fireproof concrete building in San Francisco.

The Bayonne Brass Foundry recently organized by Charles F. Knop and L. H. Van Yea, two well-known residents of Bayonne, N. J., have started operations at their new factory, 161 Hobart avenue, Bergen Point, N. J. The concern make a specialty of manufacturing castings and other articles of brass, bronze, copper and aluminum.

The Genesee Metal Works, Rochester, N. Y., report that they have booked more orders during the past month than they have in the previous year. Business is increasing with them to such an extent that they are planning to put in another crusher. They now have one built by the Jefferson Iron Works, of Detroit, Mich.

Richards & Co., Boston, Mass., the hundred-year-old metal house, reports that their trade is now on a normal basis, everything going along nicely. The firm believes that the worst has been over in the business depression and that from now on there will be a brisk trade and general activity in all branches of the metal industry.

Zucker & Levett & Loeb Company, New York, report that the demands for their triplex buff, which was put on the market about a year ago, has grown steadily ever since, and that they are now exporting them in considerable quantities. One of their recent foreign orders was for 1,000 sections, for Samuel Heath & Sons, Birmingham, England, one of the largest bedstead and brass goods manufacturers in the world.

The Joseph Dixon Crucible Company, Jersey City, N. J., report that they are busier filling orders for crucibles than ever before. They have five kilns in use, which is one more than at any previous time in the history of the concern. The use of the extra kiln necessitated the installation of considerable new machinery in the other departments of the crucible works.

Messrs. Evered & Company, Ltd., the well-known brass founders of London, Birmingham and Smithwick, are this year celebrating the centenary of the firm's establishment. The company have issued a very interesting booklet of 16 pages, giving a history of the development of the industry together with half-tones of past and present members of the firm together with photographs and descriptions of the various plants operated by them.

E. D. Paige, the treasurer and general manager of the Paige Retort and Crucible Company, Taunton, Mass., has recently been studying crucible history and finds that Taunton is the home of the crucible industry of the United States, the first crucibles being made there by Joseph Dixon and C. R. Atwood some time between 1830 and 1850. It is needless to say that all crucibles at that time were hand made.

The Ideal Furnace Company, of Chester, Pa., report that they have installed a battery of their "Ideal" tilting furnaces in the plant of the Utica Fixture Company, Utica, N. Y., and that they are giving very satisfactory service. The "ideal" furnace was described in the October, 1908, number of THE METAL INDUSTRY The Ideal Furnace Company is composed of two practical furnace men, P. J. Sweeney and W. J. Holzapfel.

The John C. Culbert Company, Pawtucket, R. I., report that they are now able to handle their Southern business much better since last October when they opened their Baltimore branch. This plant is located on the main line of the Baltimore & Ohio Railroad and is used for smelting ingot brass, solders, babbitt, etc. By the establishment of a shop in this locality they save the freight on Southern materials to their Pawtucket, R. I., works.

Despite the increase in the factory output of the Bridgeport Crucible Company, Bridgeport, Conn., their plant has been running nights since last October to satisfy the increasing demand for their pots. Mr. MacFarlane, the president and general manager, believes that from the present outlook of business it is possible in six months from now they may have to enlarge again to take care of their trade.

H. F. Carpenter & Son, of Providence, R. I., report that their green gold anodes are having a great run. This quality of anode they sell at 90 cents per pennyweight. Their C. P. gold anodes they have been manufacturing for twenty-one years, and report that they are the only ones in the world which are 1000/1000 fine. They are sold for $1.10 per pennyweight. This firm makes a number of specialties which are of interest to the manufacturing jewelers, metal workers, and the plating trade.

The Pfleghar Hardware Specialty Company, New Haven, Conn., report that they are running until 8 o'clock every day in manufacturing their hardware specialties. The firm is 45 years old and one of their products which is of special interest to polishers is the Peerless polishing wheel, which was described in the April number of The Metal Industry and which utilizes the cross grain of the leather. It is claimed to be the best and most lasting polishing wheel on the market.

The Buffalo Copper and Brass Rolling Mill, Buffalo, N. Y., which has been rolling sheet copper for a year or more, is now putting on an addition with the intention of making brass sheet, wire, rod and tube, as was noted in the April number of THE METAL INDUSTRY. The size of the addition is 172 x 144, and the company expects to have it in operation by August first. Jeremiah Howe, formerly superintendent of the Detroit mills, is now general manager of the Buffalo mill. The Waterbury Farrell Foundry and Machine Company, Waterbury, Conn., is getting out the necessary machinery for the Buffalo extension.

The Eureka Pneumatic Spray Company, 400 Canal street, New York City, report that there is a great opportunity for workmen to take up the occupation of lacquering and japanning, as the company is constantly receiving applications for good operators. It is stated that in many cases a workman who is in charge of such a finishing room can command higher pay than he has been getting in the past in other callings. Workmen who are skilled in this art and desire a position should write to the Eureka Pneumatic Spray Company.

The Industrial Building Company of New London, has closed a contract for the erection in that city of a plant for the Standard Brass and Copper Tube Company, a new concern organized under Connecticut laws and capitalized at $50,000. The main factory will be of brick, one-story high, 65 x 128 feet, with an ell, 18 x 32 feet. The new concern, which will manufacture brass and copper seamless tubing, is being promoted by F. J. Loomis of Yonkers, N. Y., who was formerly identified with the brass industry in Waterbury. About $22,000 worth of special machinery will be installed in the new plant.

The Bennett & O'Connell Company, of Chicago, who have just moved into their fine new home, mentioned in the April number of THE METAL INDUSTRY, have put up some very attractive signs, which read "Bennett-O'Connell-Stephens Company." Mr. Bennett said that Mr. Stephens had been with them many years and they thought this was a good time to add his name to the firm name. Mr. Stephens is well known in the trade. He is the patentee of several devices for the plating and polishing trade, which will soon be put on the market. All of his friends are glad to see his name added to the firm name of this reliable old house.

The Buckeye Aluminum Company, Doylestown, Ohio, have outgrown their present plant, and in July will move to Moundsville, W. Va., which is located on the Ohio River, twelve miles from Wheeling, where they will put up a new brick building 100 x 200 feet, and will have a thoroughly modern sheet metal and casting plant. The company will be in the market for spinning lathes, buffing lathes, drawing presses and foundry equipment. Their present capitalization is $150,000, $100,000 of this being new capital which has been advanced by Moundsville parties. The company is enjoying prosperity, doing double the business they were a year ago.

The J. W. Paxson Company, Philadelphia, Pa., announce that in order to give their Central West customers the best possible service, they have opened a branch warehouse at 916 to 926 George street, Toledo, O., where a complete stock of foundry supplies and equipment will be carried. L. A. Crandall, formerly of the Detroit Foundry Supply Company, will be in charge. The warehouse is located on the Toledo Terminal Belt Line Railroad, which gives the Paxson Company excellent shipping facilities. There are 22 steam railroads, 11 interurban electric lines, and 4 steamship lines running out of Toledo, so prompt shipments can be made to all sections of Ohio and the adjacent States.

The Philadelphia Roll and Machine Company, northwest corner of 23d street and Washington avenue, Philadelphia, has just closed a contract for the erection of their new roll and machine shop. The new shop will be about 120 feet long by 60 feet wide, with a lean-to erected north and south. The roll lathes and other machines will be served by a 30-ton overhead electric traveling crane. Four additional large roll lathes, now under construction, will be erected. With the additional facilities and new building the company will increase its output very considerably. They will then have a separate foundry 238 feet long by 50 feet wide, served by two overhead electric cranes, and with the three large air furnaces and improvements under consideration, it will enable this company to further increase their business of chilled and sand rolls and charcoal air furnace iron castings, for which it has a large demand.

A new factory for the manufacture of stamped metal goods, entitled the R. P. K. Pressed Metal Company, has been established in a factory building at Howard avenue and Spruce streets, Bridgeport, Conn. The company takes its name from the three incorporators, A. L. Rowland, J. Page, and H. Kaplan, and it already has a battery of seven presses and eight more ordered, being of the make of the Consolidated Press and Tool Company, Chicago, Ill., and the Waterbury Farrell Foundry and Machine Company, Waterbury, Conn. The total equipment of the new factory is said to be one of the best in the State, including a number of lathes and milling machines made by the Hendee-Norton Company, of Torrington, Conn.; also lathes made by F. E. Reed of Worcester, Mass., and shapers from Potter & Johnson, Pawtucket, R. I. Another tool to which they attach considerable importance is a water surface grinder built by the Saxon Water Surface Grinder Company, of Holyoke, Mass. William E. Cole is superintendent of the plant, and the company also has a New York office at 754 Fifth avenue.

ELECTION

The Pilling Brass Company, of Waterbury, Conn., has elected the following officers for the coming year: President and treasurer, John W. Pilling; secretary, J. L. Sweiger; directors, John W. Pilling, F. L. Sweiger and James H. Pilling.

REMOVALS

The Bassite Mining and Smelting Company, formerly located in the Commercial Tribune Building, Cincinnati, Ohio, have moved their office to 1015 Second National Bank Building of that city.

It is reported that the Oscar Barnett Foundry Company, of 105 Hamilton street, Newark, N. J., are planning to move to Harrison, N. J., an adjoining town of Newark. The company as yet are not in a position to give out any definite information on the subject.

The Chandler Company, which recently bought out a plant in New York City making name plates, have just moved it to their works at Springfield, Mass., where they are prepared to make name plates of every description, both etched, struck and any other process except casting.

FIRES

The Cheshire Brass Company, of Cheshire, Conn., which suffered a loss of $15,000 by fire which destroyed the casting shop a month ago, has brought suit against their insurance agent for $20,000 damages. A misunderstanding regarding the payment of premiums is the basis of the suit.

INCORPORATIONS

Business organizations incorporated recently. In addressing them it is advisable to include also the names of the incorporators and their residence.

PORTLAND ROSE METALIZING COMPANY, of Portland, Ore.; capital, $50,000. To metalize flowers by a secret process. Incorporators; W. P. Ross, T. J. Hoare and Thomas McCusker, Portland.

SAVAGE STAMPING COMPANY, Rochester, N. Y. Manufacturers of brass, copper, zinc, nickel and other metals. Capital, $25,000. Incorporators: H. H. Swan, L. S. Foulkers and J. E. Booth, all of Rochester.

THE FLETCHER ENAMEL COMPANY, Anderson, Md.; to manufacture and sell sheet metal and kindred products. Capital, $50,000. Incorporators: U. S. Fletcher, Solon Fletcher and U. V. Ream, all of Anderson.

ROCKFORD METAL SPECIALTY COMPANY, Rockford, Ill.; capital, $10,000. To manufacture metal specialties and do plating and tinning, etc. Incorporators: Geo. O. Forbes, Frank C. Rutz and C. M. St. John, all of Rockford.

LIQUID AUTOMETER COMPANY, New York, N. Y.; to manufacture machinery and metal work of all kinds. Capital, $100,000. Incorporators: George Rubenstein, Edward M. Bernstein, and Harry A. King, all of New York.

GRINDEN ART METAL COMPANY, Brooklyn, N. Y. Manufacture work of art in copper, brass, etc. Capital, $25,000. The directors are W. J. Grinden and J. A. Grinden, of Brooklyn, and C. E. Nellis, of Flushing, L. I.

STANDARD BRONZE AND BRASS COMPANY, Columbus, Ohio; capital, $10,000. To do a general brass and bronze foundry business. Incorporators: Orlando W. Pletcher, M. K. Pletcher, J. Lehmen and W. H. Knauss, all of Columbus.

B. M. MARTIN BRASS WORKS, New York, N. Y. Founders and workers in brass, copper and bronze. Capital, $10,000. Incorporators, Frank B. Series, Albert R. Palmer and Charles F. Kern, all of 68 William street, New York.

REINHOLD NOFLUX ALUMINUM SOLDER COMPANY, Newark, N. J.; capital, $32,000. To manufacture and sell an aluminum solder. Incorporators: O. F. Reinhold, W. S. Muchmore, H. C. Heidrich and G. W. Heidrich, all of Newark.

THE BOSTON NICKEL PLATING COMPANY, of Medford, Mass., to conduct a plating business. Capital, $15,000. President and treasurer, Charles S. Taylor; vice-president, Charles F. Campbell, and clerk, Edwin N. Jackson, all of Medford.

HATHEWAY MANUFACTURING COMPANY, Bridgeport, Conn.; capital, $100,000. To manufacture selon, bronze, copper, German silver and all kinds of metal hardware. Incorporators: Wm. E. Hatheway, C. H. Sheehan and David S. Day, all of Bridgeport.

PRINTED MATTER

PORTABLE OVENS are described in a 16-page pamphlet issued by E. E. Steiner, 58 Union street, Newark, N. J. These ovens are adapted for japanning metal and wood, enameling, baking, drying, blueing, core drying, lacquer baking and many other purposes.

THE SILENT PARTNER. The April number of this bright little house-organ has been issued by the Globe Machine and Stamping Company of Hamilton avenue, Cleveland. The "Silent Partner" contains considerable interesting matter relating to "Just Plain Bunk," the point of which to be appreciated must be read.

"NICKOLAS" LACQUERS AND THE PROPER METHOD OF APPLYING THEM.—Beginning their interesting little circular with a historic quotation from Ruskin, C. J. Nickolas & Company, of 400-402 West Van Buren street, Chicago, Ill., give some valuable instructions regarding the methods of using their popular brands lacquers.

CRUCIBLE AND OTHER GRAPHITE PRODUCTS. The Jonathan Bartley Crucible Company, of Trenton, N. J., have issued a handsome catalogue descriptive of their superior line of graphite products. The book gives a history of the graphite crucible, with directions for their use and care; also an account of the mining and preparation for shipment of graphite as a raw material.

ZAPONS. Is the title of a little descriptive pamphlet issued by the Celluloid Zapon Company, 310 Fourth avenue, New York City, in interest of their celluloid or pyroxylin lacquer. This company not only introduced soluble cotton lacquers, but were the first to manufacture and use amyl acetate on a commercial scale. They make lacquers for dip and brush, special finishes, solvent colors and enamels of every description, and are pleased to send out samples on request.

SPARE'S MANGANESE BRONZE, plastic, white and hydraulic bronze are manufactured by the American Manganese Bronze Company, of Holmesburg, Philadelphia, Pa., together with aluminum alloys, gun metal, United States Government composition, hard copper-tin alloys, and monel metal. The company have issued a little book giving valuable information comprising instruction for using their products; also comparison compression tests of their manganese bronze with other bronzes.

ADNEWS

The S. Obermayer Company, Cincinnati, are advertising their Esso core binder.

The Rockwell Furnace Company show cuts of several of their most important types of furnaces.

J. J. Pole, Geneva, N. Y., announces that he is ready to figure on metal spinning jobs of all kinds.

The Carborundum Company have doubled the space in which they advertise their grinding wheels.

The Rochester Perforating Company calls attention to their facilities for perforating all kinds of metals.

Hanson & Van Winkle Company, Newark, N. J., are featuring their new independent spindle polishing and buffing lathe.

The J. D. Smith Foundry Supply Company, Cleveland, O., call attention to their new hand-operated molding machine, and their furnaces, core ovens, and other equipment.

The Globe Machine & Stamping Company, Cleveland, O., are again advertising their tilting tumbling barrels. They also do custom sherardizing and furnish complete plants for this process.

The Monarch Engineering and Manufacturing Company, Baltimore, Md., through their advertisement in this issue invite all visitors to the Cincinnati Convention to call and see their exhibit of Steele-Harvey furnaces.

J. B. Wise, Watertown, N. Y., has a full-page advertisement in this issue describing the M. R. V. coke-fired tilting crucible furnace which has met with great success in England and is now being introduced in America.

COPPER PRODUCTION

(Issued by the Copper Producers' Association.)

	May 10, 1909. Pounds.
Stock of marketable copper of all kinds on hand at all points in the United States, April 1, 1909.....	182,279,902
Production of marketable copper in the United States from all domestic and foreign sources during April, 1909	113,574,292
Deliveries of marketable copper for consumption and export during April, 1909.....	112,656,121
Stock of marketable copper of all kinds on hand at all points in the United States, May 1, 1909.....	183,198,073

METAL MARKET REVIEW

NEW YORK, May 7, 1909.

COPPER.—The market for standard copper in London has ruled very steady during the entire month. Spot contracts opened at £57 3s. 9d., and closed at £57 12s. 6d. The lowest point touched during the month was £56 17s. 6d.

The New York market was quiet and dull during the first half of the month and prices sagged off about ⅛c. from the opening. At the close, however, the market is rather firmer again and prices have pretty nearly regained the early decline.

The exports for the month were large, amounting to 28,083 tons, making the total exports for the four months this year 81,983 tons against 111,232 tons for the same period in 1908. The exports for the month of April last year were 31,853 tons.

According to the European statistics of copper, the total visible supply has decreased 1,270 tons since the middle of the month. The figures published on the 10th of April by the Copper Producers' Association were not altogether satisfactory for the reason that under "Deliveries of marketable copper for consumption and export during March, 1909," there were probably about 10,000,000 pounds that had left the refineries around the end of March, but will not show in the exports until the month of April; the figures for the month of April will be published on May 10.

The copper market during the month has been devoid of any special features. Wall street papers have had sensational reports about heavy sales to the wire drawers, but it is understood these Wall street reports are given out for Wall street purposes and the trade treat them accordingly.

The talk about the Steel Trust taking over the Amalgamated and forming a copper trust is regarded as impracticable and impossible. The market closes fairly steady. Lake at 13 cents; special brands bring 13⅛ cents; electrolytic, 12.60 to 12.70 cents; casting brands, 12.50 to 12.60 cents.

Later, May 10, copper market strong. Lake 13¼ cents.

TIN.—The London tin market shows a net decline for the month of about £3 per ton. Spot tin opened at £134 7s. 6d., and closed at £131 5s.

The New York market has been fairly active, while prices show a decline for the month of about ½ cent per pound. The deliveries into consumption were heavy during the month, amounting to 3,200 tons, making an increase of 2,950 tons for consumption for the four months of 1909 over the same period of 1908. The total visible supply on April 30 is about 400 tons less than a month ago, but compared with April last year the visible supply to-day is 5,600 tons larger. The market is now firmer. Five to 10-ton lots, spot, 29.20 to 29.25 cents; May and June delivery, 29.20 to 29.30 cents.

LEAD.—The foreign lead market shows a net decline of about 10s. per ton during the month.

The home market has been strong and prices by the Lead Trust have been advanced from 4.10 to 4.20 cents at the close. The outside market has been rather higher than the trust price, and lead in New York has been done at 4.25 cents in carload lots, and this is the quotation to-day, but the market seems a trifle easier. In East St. Louis the market is dull at 4.10 cents.

SPELTER.—The foreign spelter market shows an advance for the month of 7s. 6d.

In New York market spelter has been rather more active, and prices have advanced about ¼ cent per pound, closing at about 5.05 cents, New York for carload lots, and dull and easier at St. Louis at 4.90 cents.

ANTIMONY.—The foreign market has held steady. Hallett's at £31, other brands £30.

In the home market antimony has been rather more active owing to the proposed increase in duty, and prices for special brands have been advanced over ¼ cent per pound. Cookson's is quoted at 8¼ cents, Hallett's at 7¾ cents.

SILVER.—The London silver market shows an advance for the month of about ¾d. and closes at the highest price, 24 7/16d.

The New York market shows an advance of 2½ cents for the month, opening at 50½ cents and closing at 53 cents, the highest point.

QUICKSILVER.—The wholesale price is unchanged at $44.00 to $44.50 per flask, with jobbing lots at $45.00 to $46.50 per flask.

PLATINUM.—The market holds steady at $22.50 to $23.00 per ounce for ordinary, and $24.50 to $25.50 for hard.

SHEET METAL.—Prices for copper wire and sheet copper are unchanged. Sheet brass has been reduced ½c. to 14 cents base, brass rods and wire 14¼c. base, being ½ cent reduction.

The old metal market has been rather more active, and consumers are buyers for their immediate needs. Prices are about ¼ cent better than a month ago, and the outlook for a further advance is good.

THE APRIL MOVEMENTS IN METALS

COPPER.	Highest.	Lowest.	Average.
Lake	13.12½	12.90	13.00
Electrolytic	12.75	12.60	12.65
Casting	12.65	12.50	12.55
TIN	29.70	29.10	29.50
LEAD	4.25	4.10	4.15
SPELTER	5.10	4.80	4.95
ANTIMONY (Hallett's)	8.00	7.65	7.80
SILVER	.53	.50½	51.43

WATERBURY AVERAGE

The average price of Lake Copper per pound as determined monthly at Waterbury, Conn.

1909. Jan. 14⅜ Feb. 13¼ Mar. 12⅞ April 13

DAILY METAL PRICES

We have made arrangements with the New York Metal Exchange by which we can furnish our readers with the Official Daily Metal Market Report of the Exchange and a year's subscription to THE METAL INDUSTRY for the sum of $10. The price of the report alone is $10. Sample copies furnished for the asking. We can furnish daily telegraphic reports of metal prices. Address THE METAL INDUSTRY, 61 Beekman street, New York.

INFORMATION BUREAU

Any firm intending to buy metals, machinery or supplies and desiring the names of the various manufacturers and sellers of these products can obtain the desired information by writing to THE METAL INDUSTRY. Commercial questions are answered by return mail. Our Information Bureau is for the purpose of answering questions of all kinds. Address THE METAL INDUSTRY, 61 Beekman street, New York.

Trade Wants on Advertising Pages 40 to 43 Following

Metal Prices, May 7, 1909.

NEW METALS.

	Price per lb. Cents.
COPPER—PIG, BAR AND INGOT AND OLD COPPER. Duty Free, Manufactured 2½c. per lb.	
Lake, car load lots	13.00
Electrolytic, car load lots	12.70
Casting, car load lots	13.60
TIN—Duty Free.	
Straits of Malacca, car load lots	29.25
LEAD—Duty Pigs, Bars and Old, 2½c. per lb.; pipe and sheets, 2½c. per lb.	
Pig lead, car load lots	4.25
SPELTER—Duty 1½c. per lb.	
Western, car load lots	5.05
ALUMINUM—Duty Crude, 8c. per lb. Plates, sheets, bars and rods, 13c. per lb.	
Small lots	28.00
100 lb. lots	25.00
Ton lots	24.00
ANTIMONY—Duty ¾c. per lb.	
Cookson's cask lots, nominal	8.25
Hallett's, cask lots	7.75
Other cask lots	7.60
NICKEL—Duty 6c. per lb.	
Shot, Plaquettes, Ingots, Blocks, according to quantity	.45 to .60
MANGANESE METAL—Duty 20%	.80
MAGNESIUM METAL—Duty free	$1.30
BISMUTH—Duty free	1.80
CADMIUM—Duty free	1.00
	Price per oz.
GOLD—Duty free	$20.67
SILVER—Duty free	.53
PLATINUM—Duty free	23.00
QUICKSILVER—Duty 7c. per lb. Price per pound	.62c. to 63c.

OLD METALS.

Dealers' Buying prices. Cents per lb.		Dealers' Selling prices. Cents per lb.
11.00 to 11.50	Heavy Cut Copper	12.25 to 12.50
11.00 to 11.25	Copper Wire	12.00 to 12.25
10.00 to 10.25	Light Copper	11.00 to 11.25
10.50 to 10.75	Heavy Mach. Comp	11.25 to 11.75
8.00 to 8.50	Heavy Brass	9.00 to 9.25
6.00 to 6.50	Light Brass	7.00 to 7.25
7.50 to 8.00	No. 1 Yellow Brass Turnings	8.25 to 8.50
8.00 to 8.50	No. 1 Comp. Turnings	9.50 to 10.00
3.80 to 3.90	Heavy Lead	4.00 to 4.10
3.50 to 3.62½	Zinc Scrap	3.62½ to 3.87½
5.50 to 6.00	Scrap Aluminum, turnings	6.50 to 7.00
10.00 to 12.00	Scrap Aluminum, cast, alloyed	11.00 to 13.00
14.00 to 15.00	Scrap Aluminum, sheet (new)	16.00 to 18.00
19.00 to 23.00	Old Nickel, solid	20.00 to 25.00
19.00 to 20.00	No. 1 Pewter	20.00 to 21.00

INGOT METALS.

	Price per lb. Cents.
Silicon Copper 10% to 20%....according to quantity	28 to 30
Silicon Copper, 30%, guaranteed " "	30 to 32½
Phosphor Copper, 5% " "	19 to 21
Phosphor Copper, 10% to 15%, guaranteed " "	28 to 30
Manganese Copper, 30% " "	30 to 35
Phosphor Tin " "	34 to 36
Brass Ingot, Yellow " "	9 to 10
Brass Ingot, Red " "	12 to 13
Bronze Ingot " "	11 to 12
Manganese Bronze " "	17 to 19
Phosphor Bronze " "	13 to 16
Casting Aluminum Alloys " "	29 to 35
PHOSPHORUS—Duty 18c. per lb. According to quantity	32 to 40

PRICES OF SHEET COPPER.

BASE PRICE, 18 Cents per Lb. Net.

PRICES MENTIONED BELOW ARE FOR QUANTITIES OF 100 LBS. AND OVER.

SIZE OF SHEETS.		64 oz. and over 50 lb. sheet 30 x 60 and heavier.	32 oz. to 64 oz. 25 to 50 lbs. sheet 30 x 60.	24 oz. to 32 oz. 18¾ to 25 lb. sheet 30 x 60.	16 oz. to 24 oz. 12½ to 18¾ lb. sheet 30 x 60.	14 oz. and 15 oz. 11 to 12½ lb. sheet 30 x 60.	12 oz. and 13 oz. 9½ to 11 lb. sheet 30 x 60.	10 oz. and 11 oz. 7¾ to 9½ lb. sheet 30 x 60.	8 oz. and 9 oz. 6¼ to 7¾ lb. sheet 30 x 60.	Lighter than 8 oz.
		Cents Per Pound Over Base Price for Soft Copper.								
Not wider than 30 ins.	Not longer than 72 inches.	Base	Base	Base	Base	1	2	3	6	9
	Longer than 72 inches. Not longer than 96 inches.	"	"	"	"	1	3	6	9	
	Longer than 96 inches.	"	"	"	"	2	6			
Wider than 30 ins. but not wider than 36 inches.	Not longer than 72 inches.	"	"	"	"	2	4	7	10	
	Longer than 72 inches. Not longer than 96 inches.	"	"	"	"	2	6	9		
	Longer than 96 inches. Not longer than 120 inches.	"	"	"	1	3				
	Longer than 120 inches.	"	"	1	2					
Wider than 36 ins. but not wider than 48 inches.	Not longer than 72 inches.	"	"	1	2	4	7	10		
	Longer than 72 inches. Not longer than 96 inches.	"	"	1	3	5	8			
	Longer than 96 inches. Not longer than 120 inches.	"	"	2	4	8				
	Longer than 120 inches.	"	1	3	6					
Wider than 48 ins. but not wider than 60 inches.	Not longer than 72 inches.	"	Base	1	3	6	11			
	Longer than 72 inches. Not longer than 96 inches.	"	"	2	4	9				
	Longer than 96 inches. Not longer than 120 inches.	"	1	3	6					
	Longer than 120 inches.	1	2	4	8					
Wider than 60 ins. but not wider than 72 ins.	Not longer than 96 inches.	Base	1	3	8					
	Longer than 96 inches. Not longer than 120 inches.	"	2	5	10					
	Longer than 120 inches.	1	3	8						
Wider than 72 ins. but not wider than 108 ins.	Not longer than 96 inches.	1	3	6						
	Longer than 96 inches. Not longer than 120 inches.	2	4	7						
	Longer than 120 inches.	3	5	9						
Wider than 108 ins.	Not longer than 132 inches.	4	6							
	Longer than 132 inches.	5	8							

The longest dimension in any sheet shall be considered as its length.

CIRCLES, SEGMENTS AND PATTERN SHEETS, advance over prices of Sheet Copper required to cut them from. 3 cents per pound.

COLD OR HARD ROLLED COPPER, 14 oz. per square foot, and heavier, add 1 " " "

COLD OR HARD ROLLED COPPER, lighter than 14 oz., per square foot, add 2 " " "

POLISHED COPPER, 20 INCHES WIDE and under, advance over price for Cold Rolled Copper of corresponding dimensions and thickness 1 " " "

POLISHED COPPER, WIDER THAN 20 INCHES, advance over price for Cold Rolled Copper of corresponding dimensions and thickness 2 " " "

COLD ROLLED COPPER, PREPARED SUITABLE FOR POLISHING, same as Polished Copper of corresponding dimensions and thickness.

COLD ROLLED AND ANNEALED COPPER SHEETS OR CIRCLES, same price as Cold or Hard Rolled Copper of corresponding dimensions and thickness.

ROUND COPPER ROD, ⅜ inch diameter or over.....Base Price.

(Rectangular, Square and Irregular Shapes, Copper Rod, Special Prices.)

	Cents per lb.
ZINC—Duty, sheet, 2c. per lb.	
Carload lots, at mill	6.75 less 8%
Casks	7.25
Open casks	7.75

Metal Prices, May 7, 1909

PRICES ON BRASS MATERIAL—MILL SHIPMENTS.

In effect May 1, 1909, and until further notice.

To customers who purchase less than 40,000 lbs. per year and over 5,000 lbs. per year.

	Net base per lb. High Brass.	Low Brass.	Bronze.
Sheet	$0.13	$0.15	.16½
Wire	.13¼	.15¼	.16¾
Rod	.13¼	.15¼	.17¾
Brazed tubing	.19⅝	—	.21½
Open seam tubing	.17⅝	—	.19½
Angles and channels, plain	.17⅝	—	.19½

50% discount from all extras as shown in American Brass Manufacturers' Price List No. 7.

NET EXTRAS FOR QUALITY.

Sheet—Extra spring, drawing and spinning brass..	½c.	per lb. net advance
" —Best spring, drawing and spinning brass....	1½c.	" " " "
Wire—Extra spring and brazing wire	½c.	" " " "
" —Best spring and brazing wire	1c.	" " " "

To customers who purchase less than 5,000 lbs. per year.

	Net base per lb. High Brass.	Low Brass.	Bronze.
Sheet	$0.14	$0.16	$0.17½
Wire	.14¼	.16¼	.17¾
Rod	.14¼	.16¼	.18¾
Brazed tubing	.20⅝	—	.22½
Open seam tubing	.18⅝	—	.20½
Angles and channels, plain	.18⅝	—	.20½

5% discount from all extras as shown in American Brass Manufacturers' Price List No. 7.

NET EXTRAS FOR QUALITY.

Sheet—Extra spring, drawing and spinning brass...	½c.	per lb. net advance.
" —Best spring, drawing and spinning brass....	1½c.	" " " "
Wire—Extra spring and brazing wire	½c.	" " " "
" —Best spring and brazing wire	1c.	" " " "

BARE COPPER WIRE—CARLOAD LOTS.

14¼c. per lb. base.

SOLDERING COPPERS.

300 lbs. and over in one order	18½c.	per lb. base.
100 lbs. to 300 lbs. in one order	19c.	" " "
Less than 100 lbs. in one order	20½c.	" " "

PRICES FOR SEAMLESS BRASS TUBING.

From 1¼ to 3½ in O. D. Nos. 4 to 13 Stubs' Gauge, 18c. per lb.
Seamless Copper Tubing, 22c. per lb.

For other sizes see Manufacturers' List.

PRICES FOR SEAMLESS BRASS TUBING Iron Pipe Sizes.

Iron Pipe Size	¼	⅜	½	⅝	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
Price per lb.	26	25	20	19	18	18	18	18	18	18	18	19	20	22	24	25

PRICE LIST OF IRON LINED TUBING—NOT POLISHED.

	Per 100 feet— Brass.	Bronze.
⅜ inch	$8	$9
½ inch	8	9
⅝ inch	10	11
¾ inch	12	13
⅞ inch	14	15
1 inch	18	20
1¼ inch	22	24
1¼ inch	25	27
1½ inch	32	35
1¾ inch	45	48
2 inch	56	60

Discount 45 and 5%.

PRICES FOR MUNTZ METAL AND TOBIN BRONZE.

Muntz or Yellow Metal Sheathing (14" x 48")	14c.	lb. net base
" " " Rectangular sheets other than Sheathing	16c.	" " "
" " " Rod	15c.	" " "
Tobin Bronze Rod	17c.	" " "

Above are for 100 lbs. or more in one order.

PLATERS' METALS.

Platers' bars in the rough 21¾c. net.

German silver platers' bars dependent on the percentage of nickel, quantity and general character of the order.

Platers' metal, so called, is very thin metal not made by the larger mills and for which prices are quoted on application to the manufacturers.

PRICES FOR SHEET BLOCK TIN AND BRITANNIA METAL.

Not over 18 in. in width, not thinner than 23 B. S. Gauge, 4c. above price of pig tin in same quantity.

Not over 35 in. in width, not thinner than 22 B. S. Gauge, 5c. above price of pig tin.

PRICE LIST FOR SHEET ALUMINUM—B. & S. Gauge.

	Wider than..... and including.....	8in. 12in.	6in. 14in.	14in. 16in.	16in. 18in.	18in. 20in.	20in. 24in.	24in. 30in.	30in. 36in.	36in. 40in.
		in coils.								
No.	13 and heavier	34	34	36	36	36	36	39	39	39
"	14	34	34	36	36	36	36	39	39	39
"	15	34	34	36	36	36	36	39	39	39
"	16	34	34	36	36	36	36	39	39	39
"	17	34	34	36	36	36	36	39	39	39
"	18	34	34	36	36	36	36	39	39	42
"	19	34	34	36	36	36	36	39	40	43
"	20	34	36	36	36	36	38	41	42	44
"	21	34	38	38	38	38	40	43	44	50
"	22	34	38	38	38	40	40	43	47	51
"	23	34	38	38	38	40	40	43	49	52
"	24	34	38	40	42	42	42	45	51	54
"	25	36	39	41	43	43	43	46	53	57
"	26	36	39	42	46	46	46	51	55	61
"	27	36	40	44	48	48	49	54	58	64
"	28	36	40	46	48	49	49	56	62	67
"	29	38	41	48	50	52	52	61	67	72
"	30	38	42	50	52	56	62	69	72	77
"	31	43	47	55	58	63	71	74	77	83
"	32	45	49	57	61	69	77	91	90	95
"	33	47	51	60	65	73	84	91	100	110
"	34	50	55	62	70	78	91	103	110	120
"	35	..	65	70	80	90	100	115	125	..
"	36	..	80	90	100	115	120	135	..	..
"	37	..	104	114	129	144	159	174	..	..
"	38	..	124	139	154	169	184	204	..	..
"	39	..	144	164	184	204	224	..	..	..
"	40	..	174	204	224	244	..	..	..	..

In flat rolled sheets the above prices refer to lengths between 2 and 3 feet. Prices furnished by the manufacturers for wider and narrower sheet. All columns except the first refer to flat rolled sheet. Prices are 100 lbs. or more at one time. Less quantities 5c. lb. extra. Charges made for boxing.

PRICE LIST SEAMLESS ALUMINUM TUBING.

STUBS' GAUGE THE STANDARD. SIZES CARRIED IN STOCK.
Outside Diameters. BASE PRICE, 25 Cents per Pound.

Stubs' Gauge.	Inches.	¾ in.	5-16 in.	⅜ in.	½ in.	⅝ in.	¾ in.	⅞ in.	1 in.	1¼ in.	1½ in.	1¾ in.	2 ins.	2½ ins.	3 ins.	3½ ins.	4 ins.	4½ ins.
11.	.120.	..	..	..	..	..	..	..	26	23	..	..	13	11	9	8	15	22
12.	.109.	..	..	..	..	..	..	..	25	..	..	..	14	..	..	..	..	..
14.	.083.	..	..	..	..	..	..	..	..	..	..	..	16	..	..	..	..	..
16.	.065.	..	..	..	..	..	27	26	26	23	22	20	20	20	20	26	30	56
18.	.049.	..	..	..	..	32	29	28	27	24	25	25	25	..	..	..	..	..
20.	.035.	116	..	45	38	33	32	31	29	28	29	29	29	30	37	48	57	80
21.	.032.	..	..	..	39	..	..	..	..	..	..	..	..	..	..	..	..	..
22.	.028.	137	97	47	41	37	36	34	33	..	..	44	..	..	..	..	..	..
24.	.022.	187	132	107	87	78	72	61	59	65	..	..	..	..	..	..	..	..

Prices are for ten or more pounds at one time. For prices on sizes not carried in stock send for Manufacturers' List.

PRICE LIST FOR ALUMINUM ROD AND WIRE.

Diameter. B. & S. G'ge.	000 to No. 10.	No. 11.	No. 12.	No. 13.	No. 14.	No. 15.	No. 16.	No. 17.	No. 18.	No. 19.	No. 20.	No. 21.	No. 22.
Price, per lb. ...	32	32½	32½	33	33½	34	34½	35	36	37	38	43	46

200 lbs. to 30,000 lbs., 3 cents off list; 30,000 lbs. and over, 4 cents off list.

PRICE LIST FOR GERMAN SILVER IN SHEETS AND ROLLS.

Per cent.	Price per lb.	Per cent.	Price per lb.
12	$0.52	16	$0.58
13	.53	17	.59
14	.54	18	.60
15	.55		

These prices are for sheets and rolls over 2 inches in width, to and including 8 inches in width and to No. 20, inclusive, American or Brown & Sharpe's Gauge. Prices are for 100 lbs. or more of one size and gauge in one order. Discount 50%.

GERMAN SILVER TUBING.

4	per cent.	to No.	10, B. & S. Gauge, inclusive		$0.60
6	"	"	10, " " "		.70
9	"	"	10, " " "		.85
12	"	"	19, " " "		1.00
15	"	"	19 " " "		1.15
16	"	"	19, " " "		1.20
18	"	"	19, " " "		1.30

German Silver Tubing thinner than No. 19 B. & S. Gauge add same advances as for Brazed Brass Tube.

For cutting to special lengths add same advances as for Brazed Brass Tube. Discount 40%.

PRICE OF SHEET SILVER.

Rolled sterling silver .925 fine is sold according to gauge quality and market conditions. No fixed quotations can be given as prices range from 2c. below to 6c. above the price of bullion.

Rolled silver anodes .999 fine are quoted at 2c. above the price of bullion.

"ELECTRIC" CLEANING COMPOUND

IS ADAPTED FOR CLEANING ALL METALS BEFORE PLATING

Cleveland, O., January 4, 1909

Cleveland Platers Supply Co., City

Gentlemen:—I have had charge of the plating department of The North Electric Co., of this city, for the past four years, and have been using your "Electric" Cleaning Compound since November, 1907. Prior to the time of trying out your compound, I had been using a cyanide and potash electric cleaner continually for three years.

My fourteen months' experience with your compound has demonstrated that it is a better cleaner, in every respect, than the cyanide and potash cleaner. Not only does the "Electric" compound clean all of my polished brass and steel work thoroughly, but I also use it for cleaning large quantities of soldered tin boxes, and also zinc transmitter fronts. Before using your material, this tin and zinc work had to be hand scrubbed, as it could not be cleaned in the cyanide and potash cleaner without becoming badly stained and oxydized.

Our work consists of telephone parts, and our output is very large, but I do not find it necessary to scrub any of the work.

The expense for making up and maintaining your cleaning solution is about one-half as much as for the cyanide and potash cleaner. Yours truly,

THOS. SWEENEY

(Publication of above letter sanctioned by The North Electric Co.)

Sold only by

CLEVELAND PLATERS SUPPLY CO.

1838 Central Avenue, Cleveland, Ohio

"CLEANING BY ELECTRICITY," a booklet on electric cleaning, mailed free to any address.

If You Make

Buffing Compositions, Metal Polishes, Polishing Rouges, Scouring Soaps, Cleaning Compounds, or anything of similar nature, you ought to investigate

Missouri Tripoli Flour

It may be better suited for your purposes than the material you now use. *It may save you money.*

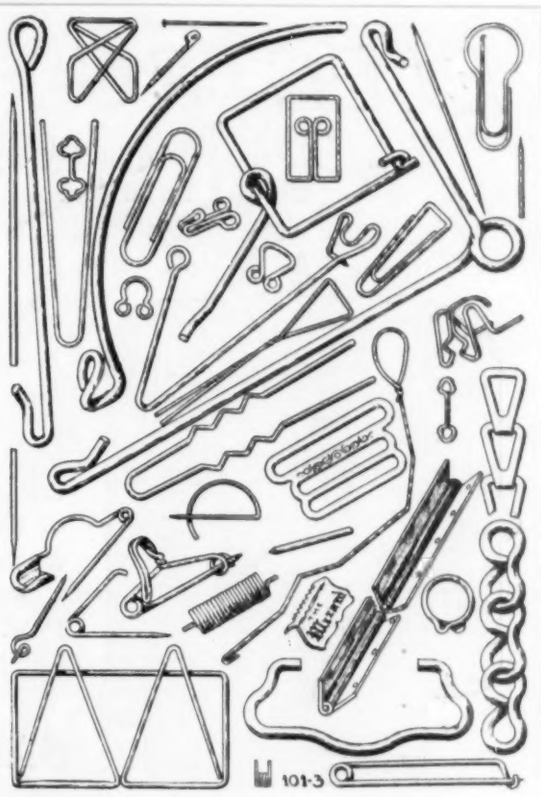
MISSOURI TRIPOLI FLOUR is made in all grades and colors—"Rose," "Cream" and "White." It is the most effective VERY FINE abrasive known. Our finest grade—"Air Dust"—is an impalpable powder, and yet a very fine abrasive.

MISSOURI TRIPOLI STONE, it its natural state, or the flour, will absorb 50% of its own weight of fluids of the consistency of water. We also make TRIPOLI STONES FOR WATER FILTERS.

Prices upon application.

American Tripoli Company

SENECA, MISSOURI



BAIRD SPECIAL MACHINERY

To design and build machinery to make such articles as shown above is a specialty with us.

We are not novices either, as over 50 years' experience has taught us many things to avoid.

From the benefit of these years of experience we know we can

SAVE YOU MONEY

Therefore, do ycu not think it would be well for you to write us when in need of a machine to make any article, enclosing sample, and get our estimate?

Ask for **BULLETIN 101** which will further enlighten you as to our capabilities.

THE BAIRD MACHINE CO.

OAKVILLE, CONN.

Telegrams
BAIRDMACHN WATERBURY
Western Union Code